

2014

**allelectra**

**HIGH VACUUM AND UHV COMPONENTS**

## Allectra – Mechanical, Electrical and Optical Components for UHV and High Vacuum

### COMPANY HISTORY

Allectra GmbH was founded in 2002 in Berlin. Within the first year, the range of Sub-D Feedthroughs and associated connectors and cables was developed and put into production. Allectra's new range of components was well received by customers in Germany, Austria and Switzerland,

including Universities, major Synchrotron laboratories and High Technology Companies.

In 2003 Allectra Limited was started in Sussex U.K. to provide Sales support for customers in for Great Britain, Scandinavia and Southern Europe.

A separate Sales Office was founded in France in 2004.

Together this enabled the company to deliver to customers across the whole of Europe. Subsequently distribution was extended to Japan, the United States and India by strategic partners like Vytex



*Allectra GmbH facility near Berlin (Germany)*

### MANUFACTURING

Allectra manufactures its feedthroughs, cables, mechanical components and other items including quick access doors. Some components are manufactured from partner companies in Italy, Korea and the US. All components are subjected to rigorous quality control and inspection.



*Cleaning to modern environmentally friendly standards*

### DEVELOPMENT

Allectra is actively involved in development of new products especially where these can yield technical advantage and cost saving over conventional products. For example our complete new range of Fibre Optic vacuum components.

### CUSTOMER RELATIONS

Allectra has specialised in offering both standard and special components on short delivery and competitive prices. In addition the product range has been developed to meet customers' needs. This philosophy has led to sustained year on year growth of the company.



*Individual inspection of every component before acceptance*

### LATEST ADDITIONS TO THE PRODUCT RANGE

Latest Products and Technical Updates are posted on our web site:

[www.allectra.com](http://www.allectra.com)



Together with strategic partners, Allectra offers world-wide service.  
 If in doubt, which office is responsible for your area, please contact one of our sales offices.

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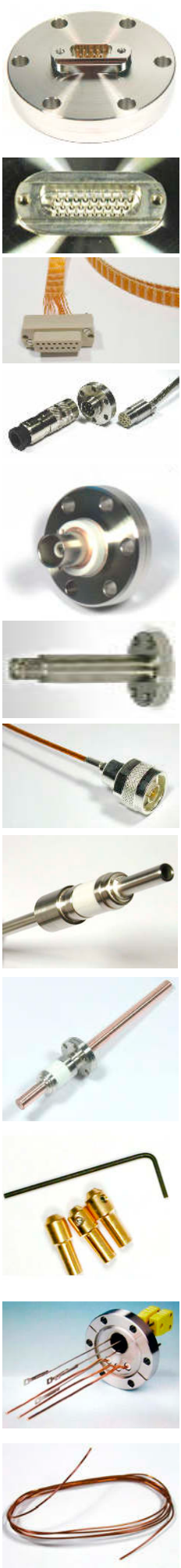
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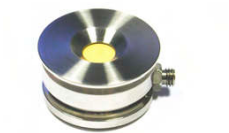
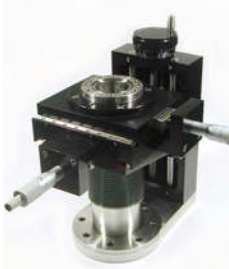
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- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors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

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## Allectra Vacuum Components Catalogue - Terms and Conditions (Summary)

Allectra offers products to Companies, Institutes, Universities and Research facilities.

All prices are in Euros, ex-works Allectra stores in Berlin / Schoenfliess or Sheffield Park /East Sussex.

The prices do not include VAT.

Prices can be quoted in Pounds Sterling, US Dollars or other currencies. Please call the Sales Office.

Prices are for guidance only and are subject to change at any time without notice.

The catalogue is not an offer in the legal sense of the law.

Please contact the Sales Office for a firm quotation.

Prices do not include shipping costs. Typical delivery charges are £12.-- for shipments within UK and €22.00 for shipments within Europe EU. They may be greater in some cases for heavy or bulky items.

Quantity Discounts are available. Please ask for details.

To open a trading account, please contact the Sales Office.

Allectra Products carry a two year warranty. Wear and Tear and improper use are excepted.

### Copyright and Trade Mark Ownership

The "Allectra flange" is a registered copyright design of Dr Bernhard Luckscheiter

"Caburn UHV" is a registered trade mark of Dr Michael Holmes

"Viton" and "Kapton" are registered trade marks of Du Pont

"Conflat" is a registered trade mark of Varian Associates

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"Constantan" is a registered trade mark of Wilber B Driver Co.

"CeFiX" and "sTeRiC Clamp" are registered trade marks of EVAC AG

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### Safety of Electrical Installations

Allectra offers components for the construction of Vacuum Systems. Some of these components, particularly those designed for use with Voltages of 40V or over can cause injury or death, if incorrectly installed. It is the purchaser's responsibility to ensure that Components are installed correctly and in accordance with current safety regulations by competent persons.

### RoHS Conformity

All components delivered by Allectra conform with the RoHS Directive (DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment). The RoHS directive is valid for electrical components like feedthroughs, connectors and cables.

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Allectra wants to thank the community for the excellent work.

## Technical Information, Flange Sizes

### Nominal Internal Diameters (DN) and Flange Sizes

Allectra uses the internationally accepted and by ISO-3669-2 normed system of nominal internal diameters (DN) to identify flange sizes. These correspond with other naming conventions as the following table. The DN convention applies to Copper Gasket Flanges (CF Types), Clamp Flanges (KF) Types, ISO-K, and ISO-F flanges (LF Types) The sizes DN25 and DN50 are not in common use for CF flanges. Additionally there are sizes DN75 (4 5/8"), DN125 (6 3/4"), DN275 (13 1/4"), 14"(no ISO-Equivalent!), DN300 (14 1/2"), DN350 (16 1/2") and DN400 (18 1/2"). These are available on request.

ISO-K Flanges are standardised up to the size 630, ISO-F Flanges up to the size 1000.

In addition to CF, KF and ISO-K/F we can offer flanges as well as components on the following flange types:

- JIS Standard (Size 10 to 300, mainly used in Asia)
- CeFix Flanges (EVAC registered design and trade mark)
- sTeRic™ Clamp Flanges (mainly used in Pharmacy, Medicine and Biology)
- EVAC ISO-Tapered Flanges (ISO-Type for closure by chain clamps)
- Flanges according customer drawings

DN	NW	Typ. Tube ID (mm)	US Size ID (Inch)	Allectra Standard ID	CF Flange OD (mm)	CF Flange OD (Inch)	KF /ISO-K Flange OD (mm)
DN16	16	16	3/4"	16	34	1 1/3"	30
DN25	25	25	1"	--	(54)	(2 1/8")	40
DN40	35	35	1 1/2"	37	70	2 3/4"	55
DN50	50	47	2"	--	(86)	(3 3/8")	75
DN63	63	57	2 1/2"	64	114	4 1/2"	95
DN100	100	98	4"	102	152	6"	130
DN160	160	146	6"	153	203	8"	180
DN200	200	197	8"	200	254	10"	240

## Vacuum Specification / Operating Temperatures

All UHV Components are specified for a maximum differential pressure of 1 bar and for use in vacuum better than  $1 \times 10^{-10}$  mbar. UHV Components are leak tested for a leak rate less than  $5 \times 10^{-10}$  mbar-l/s Helium. Almost all components are bakeable to 200°C, unless otherwise specified in the description.

KF and ISO-K Components are specified for use to  $10^{-8}$  mbar. The usable temperature range is mainly defined by the sealing material. Viton is suitable for 150°C continuous and 200°C for short periods. The maximum differential pressure is 1 bar. With Aluminium metal seals and adequate clamps, cryo-applications, UHV leak tightness and over pressure are possible. Please ask for detailed specification.

EVAC Components are specified for over-pressure as well as for vacuum. Depending on flange type and size, pressures up to 300 bars are possible. Please see specification in the separately available EVAC Catalogue.

Feedthroughs, some of which contain Kovar (a NiFe alloy which has a good match to the thermal extension of Glass and Ceramic) can be used down to -50°C. At lower temperatures, a phase transition occurs which can damage the feedthrough. Special cryogenic feedthroughs are available, please ask the Sales Office for details. Voltage ratings for vacuum components are valid for pressures  $< 1 \times 10^{-3}$  mbar.

## Conformance of Allectra Components

Allectra CF UHV Components use the internationally accepted copper gasket flange system. They are standardized by ISO 3669-2 for the sizes DN10 to DN400 and are compatible with the Varian Conflat® and CF or FC types from Vacuum Generators and other manufacturers for sizes up to and including DN200CF. As the ISO 3669-2 standard was published in 2007, older flanges larger than DN200 might not fit to actual flanges.

KF types are compatible with Klein Flange types and conform to ISO 1609.

ISO-K & ISO-F types are compatible with LF (Large Flange) types and conform to ISO 2861.

- 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

## Grades of Stainless Steel for UHV

The best grade of stainless steel is type 316LN (1.4429). It has the lowest magnetic permeability, the best stability after machining and good TIG welding characteristics. It also has good corrosion resistance particularly against Chloride compounds. This material is expensive and tubes are generally not available.

The best compromise between price, performance and availability is grade 316L (1.4404). This material has very similar properties to 316LN. Good welding characteristics, corrosion resistance and mechanical hardness are very similar. The magnetic permeability can be as low as 1.005.

Summary of Composition and Vacuum Properties of Stainless Steels used for UHV.

USA AISI	EU EN	C max	Cr	Ni	Mo	N	Properties	Suitability for UHV
304	1.4301	0,08%	18%	9%	-	-	General austenitic SS, relatively low cost	Medium
304L	1.4306	0,03%	18%	9%	-	-	Extra low carbon prevents carbide precipitation - general UHV use	Good
304LN	1.4311	0,03%	18%	9%	-	0,18%	Improved mech. properties compared to 304L	Good
316	1.4401	0,08%	16,6%	12%	2,5%	-	General purpose but higher corrosion resistance than 304	Very good
316L	1.4404	0,03%	16,6%	12%	2,5%	0,1% max	Extra low carbon, good for TIG welding, highest corrosion resistance	Excellent
316LN	1.4429	0,03%	16,6%	12%	2,5%	0,12 - 0,22%	Extra Low Carbon, mag. Permeability <1.005, highest mech. stability	Excellent
321	1.4541	0,08%	17,5%	9%	-	-	General Purpose, especially used for bellows	Good

## Remarks for Weldable Feedthroughs

All weldable feedthroughs are tested for leak tightness. The welding requires care and experience, even with best practice some failures may occur. The warranty does not include failures caused by over-heating etc.

Allectra is happy to quote for ready made items, even on custom flanges.

### Abbreviations used in this catalogue

BeCu	Beryllium-Copper
F/T	Feedthrough
HV	High Vacuum
UHV	Ultra High Vacuum
ID	Inner Diameter
OD	Outer Diameter
SS	Stainless Steel
T/C	Thermocouple
POR	Price On Request



Sub-D Feedthroughs, Connectors, Pins & Cables



**1.1 SUB-D: CF FLANGES**

-> Page 1.2

Sub-miniature D Type Feedthroughs on CF Flanges  
 9 to 300 pins, 40CF to 160CF



**1.2 SUB-D: KF & ISO FLANGES**

-> Page 1.3

Sub-miniature D type Feedthroughs on KF and ISO-K flanges  
 Sub-D weldables



**1.3 SUB-D: SPECIAL ASSEMBLIES**

-> Page 1.4

Multiple Feedthrough Flanges  
 CF, ISO-K and custom



NEW

**1.4 SUB-D: HIGH DENSITY**

-> Page 1.5

High Pin Density Sub-D Feedthroughs  
 26 Pins and 78 Pins in standard shell



NEW

**1.5 SUB-D: COMBINATION TYPES**

-> Page 1.6

Combination Sub-D Feedthroughs  
 Power and Co-axial types



**1.6 SUB-D: UHV SOCKETS**

-> Page 1.7

UHV PEEK and Ceramic Plugs and Sockets



**1.7 SUB-D: HV & AIR SOCKETS**

-> Page 1.8

High Vacuum Plugs and Sockets  
 Air Side Sockets



**1.8 SUB-D: CRIMP PINS**

-> Page 1.9

Crimp Pins for Sub-miniature D plugs and sockets



**1.9 SUB-D: SPECIAL SOCKETS**

-> Page 1.10

Sockets for Special Sub-Minitaure D Feedthroughs  
 High density and Coaxial Combination types



**1.10 SUB-D: THERMOCOUPLE**

-> Page 1.11

Sub-miniature D Feedthroughs for use with K type thermocouples



**1.11 SUB-D: READY MADE CABLES**

-> Page 1.12

Sub-D compatible ready made In-vacuum cables

- 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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### Sub-miniature D Type Feedthroughs on CF Flanges

#### 9 to 300 Pins, 40CF to 160CF

- Electronics industry standard Sub-miniature D system
- 9, 15 and 25 way Feedthroughs on 40CF flange
- Multiple and custom Feedthrough flanges
- UHV PEEK, Ceramic and Air Side sockets



#### General Specifications Sub-Miniature D

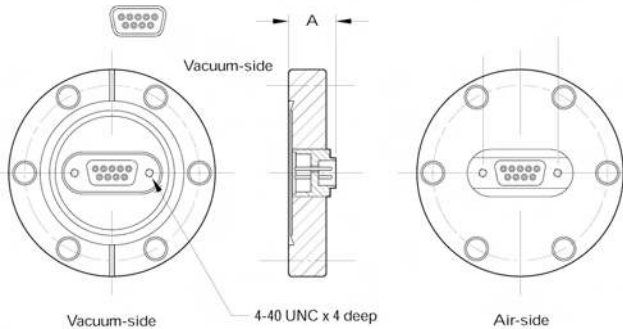
Compliance	DIN 41652, MIL-C-24308
Pin-ø	1.0mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel 316L
Test Voltage	500V DC
Max. Current	5A per pin
Cont. Current	3A per pin, all pins loaded
Temp.	-200°C to 230°C
Leak rate	<5x10 <sup>-10</sup> mar-l/s He

#### Sub-D Feedthroughs on CF Flanges 500V, up to 5 Amps per Pin

**REDUCED**

SIZE	NO. OF PINS	PART NUMBER	EURO
40CF	9	210-D09-C40	250,00
40CF	15	210-D15-C40	292,00
40CF	25*	210-D25-C40	345,00
63CF	15	210-D15-C63	323,00
63CF	25	210-D25-C63	345-,00
63CF	50	210-D50-C63	448,00
100CF	37	210-D37-C100	461,00
100CF	50	210-D50-C100	465,00

\* uses special socket connector on vacuum side- page 1.7



#### Multiple Sub-D Feedthroughs on CF Flanges 500V, up to 5 Amps per Pin

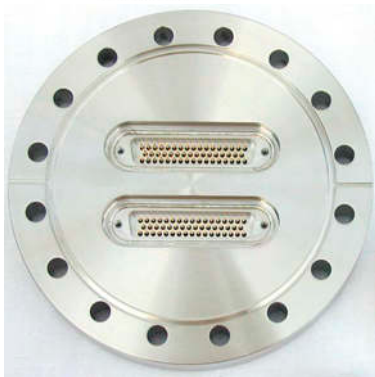
**REDUCED**

SIZE	NO. OF PINS	PART NUMBER	EURO
63CF	2x D15	210-D15-C63-2	635,00
63CF	2x D25	210-D25-C63-2	687,00
63CF	3x D15	210-D15-C63-3	932,00
100CF	4x D25	210-D25-C100-4	POR
100CF	2x D50	210-D50-C100-2	POR
160CF	8x D25	210-D25-C160-8	POR
160CF	6x D50	210-D50-C160-6	POR

other combinations on request, see page 1.4

We offer a comprehensive range including unique products:

- 9, 15 and 25 Pins on 40CF
- 50 Pins on 63CF
- 9 Pins on 25KF / 25 Pins on 50KF
- High Density versions with 26 and 78 pins



210-D50-CF100-2



210-D15-CF100-6

210-D15-CF63-2

## Sub-miniature D type Feedthroughs on KF and ISO-K Flanges

### Sub-D weldable versions

- Flanged versions with KF and ISO-K
- Weldable versions suitable for TIG welding
- Special types e.g. 9 pins on a 25KF flange and 25 pins on 50KF. (For these versions vacuum side connectors without the mounting screws are required (see page 14), standard air side connectors will fit.)



### General Specifications Sub-Miniature D

Compliance	DIN 41652, MIL-C-24308
Pin-ø	1.0 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel
Test Voltage	500V DC
Max. Current	5A per pin
Cont. Current	3A per pin, all pins loaded
Temp.	-40°C to 200°C (limited by flange)
Leak rate	<1x10 <sup>-9</sup> mbar-l/s He

Components of a complete system:

- feedthrough
- connector
- pins
- housing with strain relief
- cable



Sub-D Weldables in all sizes from 9 to 50 pins

### General Specifications Weldable Sub-D

Height	17 mm
Standard welding	TIG without filler
Material	Stainless Steel
Leak rate	<1x10 <sup>-9</sup> mbar-l/s He

Please note: Welding Sub-D Feedthroughs requires care and experience! Damage to the Feedthroughs during welding is not covered by the warranty. We are happy to offer complete assemblies at competitive prices.

### Sub-D Feedthroughs on KF Flanges

500V, up to 5 Amps per Pin

REDUCED

SIZE	NO. OF PINS	PART NUMBER	EURO
25KF	9*	210-D09-K25	250,00
40KF	9	210-D09-K40	250,00
40KF	15**	210-D15-K40	292,00
50KF	15	210-D15-K50	297,00
50KF	25**	210-D25-K50	345,00
63ISO-K	25	210-D25-ISO63	332,00
63ISO-K	50**	210-D50-ISO63	442,00
100ISO-K	37	210-D37-ISO100	461,00
100ISO-K	50	210-D50-ISO100	448,00

\* uses small "SX"-type socket connector - page 1.8

\*\* uses small "S"-type socket connector - page 1.8

### Multiple Sub-D F/T's on ISO-K Flanges

500V, up to 5 Amps per Pin

REDUCED

SIZE	NO. OF PINS	PART NUMBER	EURO
63ISO-K	2x15	210-D15-ISO63-2	621,00
63ISO-K	2x25	210-D25-ISO63-2	674,00
63ISO-K	3x15	210-D15-ISO63-3	919,00
100ISO-K	4x25	210-D25-ISO100-4	POR
100ISO-K	2x50	210-D50-ISO100-2	POR
160ISO-K	8x25	210-D25-ISO160-8	POR
160ISO-K	6x50	210-D50-ISO160-6	POR

### Sub-D Feedthroughs WELDABLES

500V, up to 5 Amps per Pin

NO. OF PINS	SIZE (mm)	PART NUMBER	EURO
9	14.5x33	218-D09-SS	280,00
15	16.5x38	218-D15-SS	318,00
25	19x55	218-D25-SS	338,00
37	19x70	218-D37-SS	419,00
50	19x68	218-D50-SS	439,00

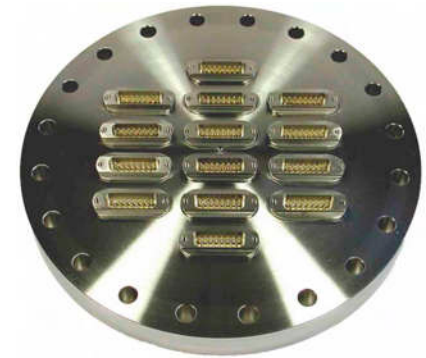
non-magnetic versions on request

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

## Multiple Feedthrough Flanges

### CF, ISO-K and Custom

- Standard or custom flanges
- In-house manufacturing for fast delivery and competitive prices
- Allectra can produce drawings for approval or we can work with customer drawings.
- Titanium body Feedthroughs on Titanium flanges to special order



#### Specifications for Specials

Possible Feedthroughs	Sub-D, Coaxial and all other Feedthroughs Combinations with Fibreoptic or viewports
Possible Flanges	CF, KF, ISO-K, ISO-F, JIS, ASA and custom flanges Adapter flanges
Flange materials	SS, 316L, 316LN, 304, Titanium
Standard Leak Check	$<1 \times 10^{-9}$ or $5 \times 10^{-10}$ mbar-l/s He depending on flange

#### Multiple Sub-D Feedthroughs on Standard Flanges Examples of combinations of Sub-Ds

SIZE	NO. OF PINS	PART NUMBER	EURO
100ISO-K	72(8x 9)	219-D09-ISO100-8	POR
160CF	153(7x9+6x15)	219-D09-7-D15-6-C160	POR
160CF	120(8x15)	219-D15-C160-8	POR

#### Multiple Sub-D Feedthroughs on various Flanges Sub-D combined with other feedthroughs

SIZE	NO. OF PINS	PART NUMBER	EURO
40CF	9 + BNC	219-D09-BNC-C40	POR
40CF	9 + 2xBNC	219-D09-BNC-2-C40	POR
Plate	12x 9 + 12x 15	SPECIAL	POR



Three examples of special arrangements  
 Left: 9-pin Sub-D and floating Shield SMA on 40CF  
 Top: Various Sub-D Feedthroughs and tapped holes on an 250 ISO-K  
 Right: Custom Rectangular Flange with 24 Sub-D type Feedthroughs

#### General Specifications Titanium Sub-D

Flange and Housing	Titanium
Pins	WCu (non-magnetic)

#### Sub-D Feedthrough on CF40 flange Titanium Flange

SIZE	NO. OF PINS	PART NUMBER	EURO
40CF-TI	9	210-D09-C40-TI	POR

Titanium Feedthroughs with Titanium flanges are available on request. If zero magnetism is an issue, they might be the solution. Please enquire.

## High Density Sub-D

### 26 and 78 Pins in a Standard Shell

High density Sub-D Connectors offer more pins on the same shell size: Instead of 15 pins, 26 pins fit in the same space. And instead of 50 pins, 78 pins are possible. A 3-row / 4-row pin arrangement with reduced pin diameter makes this possible.

For the Vacuum side PEEK connectors are available.



#### General Specifications HIGH DENSITY SUB-D

Compliance	DIN 41652 part 2 , MIL-C-24308
Pin-ø	0.7 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel 316L
Test Voltage	500V DC
Max. Current	3A per pin
Cont. Current	1.5A, all pins loaded
Temp.	-200°C to 230°C
Leak rate	<math>5 \times 10^{-10}</math> mbar-l/s He

*For HD Connectors, only one type of Pin is available. Therefore these connectors INCLUDE the required amount of Pins.*

*Spare Pins and Male Pins are available.*

#### General Specifications HIGH DENSITY PINS

Pin-ø	0.7 mm
Cable diameter	0.25 - 0.8 mm max (AWG22)
Material	phosphor bronze (female) Cu-Alloy (male)
Contact finish	hard-gold-plated over Nickel



*High Density Pins, Male and Female. As a comparison, a Standard Pin is shown on the left.*

#### Sub-D Feedthroughs on CF Flanges, HIGH DENSITY

NEW

SIZE	NO. OF PINS	PART NUMBER	EURO
WELD	26	218-HD26-SS	395,00
40CF	26	210-HD26-C40	419,00
40KF	26	210-HD26-K40	422,00
50KF	26	210-HD26-K50	442,00
63CF	2x26 (52)	210-HD26-C63-2	864,00
63CF	3x26 (78)	210-HD26-C63-3	1.266,00
<hr/>			
WELD	78	218-HD78-SS	651,00
63CF	78	210-HD78-C63	707,00
100CF	78	210-HD78-C100	739,00
100CF	2x78 (156)	210-HD78-C100-2	1386,00

#### Sub-D High Density CONNECTORS AIR/ VACUUM

NEW

TYPE	NO. OF PINS	PART NUMBER	EURO
AIR	26	211-FS26H-AIR	12,00
HV/ UHV*	26	211-FS26H-PK	179,00
<hr/>			
AIR	78	211-FS78H-AIR	24,00
HV/UHV*	78	211-FS78H-PK	285,00

\*) : 26 / 78 off Crimp pins are included!

#### Sub-D High Density CRIMP PINS

TYPE	NO. OF PINS	PART NUMBER	EURO
FEMALE	10	212-PINFHD-10	15,00
FEMALE	26	212-PINFHD-26	32,00
MALE	10	212-PINMHD-10	15,00
MALE	26	212-PINMHD-26	32,00



*Air Side Connector. The connector is solder type*

- 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

# 1.6 SUB-D POWER & COAXIAL

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## Combination Sub-Ds:

### Power, Coaxial and Standard Pin Feedthroughs

Combination Feedthroughs offer a mixture of Power Pins, Coaxial Pins and Standard Pins in one shell. The Power Pins are ideal for heater applications.

NEW: Versions with 3, 5 and 8 Pins are now available! Please ask for further details.



### Sub-D Feedthroughs on CF Flanges, MIXED POWER (P) + Standard (S) 1mm Pins

REDUCED

SIZE	NO. OF PINS	PART NUMBER	EURO
WELD	2P+5S	218-X15-2P5	380,00
40CF	2P+5S	210-X15-2P5-C40	428,00
63CF	2P+5S	210-X15-2P5-C63	471,00
63CF	4P+10S	210-X15-2P5-C63-2	881,00
40KF	2P+5S	210-X15-2P5-K40	423,00
63ISO-K	2P+5S	210-X15-2P5-ISO63	460,00
63ISO-K	4P+10S	210-X15-2P5-ISO63-2	861,00

### General Specifications COMBINATION POWER SUB-D

Compliance	DIN 41652, MIL-C-24308
Standard Pin-ø	1.0 mm
Power Pin-ø	3.6 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel 316L
Test Voltage	500V DC
Max. Current	Power Pin: 20A
Max Current	Standard Pin: 5A
Temp.	-200°C to 230°C
Leak rate	<5x10 <sup>-10</sup> mbar-l/s He

### HIGH POWER

#### Connectors and Pins

TYPE	NO. OF PINS	PART NUMBER	EURO
AIR	2P +5	211-FX15-2x5-AIR	9,00
AIR Male	2P +5	211-MX15-2x5-AIR	9,00
HV*	2P +5	211-FX15-2x5-HV	62,00
HV Male*	2P +5	211-MX15-2x5-HV	62,00
UHV *	2P +5	211-FX15-2x5-PK	162,00
Power Female	1 off	212-POWER-F	3,50
Power Male	1 off	212-POWER-M	3,00
Coax Female	1 off	212-COAX-F	24,00
Coax Male	1 off	212-COAX-M	25,00

\*) Vacuum connectors include 5 off crimp pins



#### Power Pins

Left: Male, Right: Female

The female versions fit to the F/T.

The Power connectors use the same pins on air and vacuum side.

The Connectors accept Power contacts as well as Co-axial ones. Please order the desired Pins separately and insert them into the Connector.

The Standard 1mm Pins are included with the Connectors.

Please note: Welding Sub-D Feedthroughs requires care and experience! Damage to the Feedthrough during welding is not covered by the warranty. We are happy to offer complete assemblies at competitive prices.

### General Specifications COMBINATION COAXIAL SUB-D

Compliance	DIN 41652, MIL-C-24308
Standard Pin-ø	1.0 mm
Coaxial Pin	Floating shield
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel 316L
Test Voltage	500V DC
Impedance Coax	not constant
Temp.	-200°C to 220°C
Leak rate	<5x10 <sup>-10</sup> mbar-l/s He

### Sub-D Feedthroughs on CF/ KF Flanges, MIXED COAXIAL (CX) + Standard (S) 1mm Pins

NEW

SIZE	NO. OF PINS	PART NUMBER	EURO
WELD	2CX+3S	218-X15-2C3	355,00
40CF	2CX+3S	210-X15-2C3-C40	402,00
40KF	2CX+3S	210-X15-2C3-K40	402,00
63CF	4CX+6S	210-X15-2C3-C63-2	796,00
63CF	6CX+9S	210-X15-2C3-C63-3	1197,00

**UHV Plugs and Sockets in PEEK and Ceramic**

Allectra offers Female Connectors (Sockets) which fit to Feedthroughs as well as Male Connectors (Plugs) for in-vacuum coupling.

- Ceramic connectors: max. 300°C
- PEEK connectors: max. 230°C

Please order Pins separately, see page 1.9 for range.  
 HV versions and air side connectors are listed on page 1.8.

**Specification PEEK Sub-D Connectors**

Type	Sub-D Connectors for in-vacuum use
Vacuum	High Vacuum and UHV
Type	Female- fits Feedthroughs & Male Plugs
Body material	unfilled (pure) PEEK
Locking screws	included for Vac side (vented)
(\$ type:	no Vac side locking screws)
Temp. range	-50°C to 230°C
Use Pins	212-PINF, -PINF-B, -PINF-S, -PINF-TC
(Male types:	212-PINM-10, -PINM-S, -PINM-TC)

**Specification Ceramic UHV Sub-D Connectors**

Vacuum	UHV
Socket type	Female- fits Feedthroughs & Male Plugs
Body material	Ceramic / Glass-Ceramic
Locking screws	included for Vac side (vented)
(\$ type:	no Vac side locking screws)
Temp. range	4K to 300°C
Use Pins	212-PINF, -PINF-B, -PINF-S, -PINF-TC

Female Sockets include vented 4-40 UNC screws to fix to the F/T. The Male versions are supplied with long M2.5 screws to connect to a Female Socket.

The housings allow easy handling and provide shielding. They are made out of Aluminium and include a cable clamp for strain relief. Braid can be used to get a fully shielded cable connection (see Sec. 6). They fit to Male and Female Connectors.



**UHV PEEK Sockets**  
**Female PEEK Sockets to fit Feedthroughs**

REDUCED

VACUUM	No. OF POLES	PART NUMBER	EURO
HV/UHV	9	211-FS09-PK	120,00
HV/UHV	15	211-FS15-PK	141,00
HV/UHV	25	211-FS25-PK	149,00
HV/UHV	25	211-FS25-PK-S*	155,00
HV/UHV	37	211-FS37-PK	168,00
HV/UHV	50	211-FS50-PK	178,00

\* for use with 210-D25-CF40 (no housing available)

**UHV PEEK Plugs**  
**Male PEEK Plugs to fit Female Sockets**

REDUCED

VACUUM	No. OF POLES	PART NUMBER	EURO
HV/UHV	9	211-MS09-PK	120,00
HV/UHV	15	211-MS15-PK	141,00
HV/UHV	25	211-MS25-PK	149,00
HV/UHV	37	211-MS37-PK	168,00
HV/UHV	50	211-MS50-PK	178,00

**UHV Ceramic Sockets**  
**Female Ceramic Sockets to fit Feedthroughs**

VACUUM	No. OF POLES	PART NUMBER	EURO
UHV	9	211-FS09-UHV	170,00
UHV	15	211-FS15-UHV	199,00
UHV	25	211-FS25-UHV	216,00
UHV	25	211-FS25-UHV-S*	250,00
UHV	37	211-FS37-UHV	242,00
UHV	50	211-FS50-UHV	251,00

\* for use with 210-D25-CF40 (no housing available)

**UHV Ceramic Plugs**  
**Male Ceramic Plugs to fit Sockets**

VACUUM	No. OF POLES	PART NUMBER	EURO
UHV	9	211-MS09-UHV	170,00
UHV	15	211-MS15-UHV	199,00
UHV	25	211-MS25-UHV	210,00
UHV	37	211-MS37-UHV	POR
UHV	50	211-MS50-UHV	273,00

**Housings with Strain Relief**  
**for PEEK and Ceramic Connectors, Male and Female**

VACUUM	No. OF POLES	PART NUMBER	EURO
HV/UHV	9	211-HSG-D09-UHV	56,00
HV/UHV	15	211-HSG-D15-UHV	63,00
HV/UHV	25	211-HSG-D25-UHV	72,00
HV/UHV	37	211-HSG-D37-UHV	88,00
HV/UHV	50	211-HSG-D50-UHV	92,00

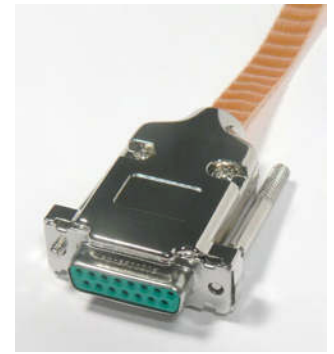
1 Sub-D  
 2 CM + DIL F/T  
 3 Coax F/T  
 4 Power High Voltage  
 5 Thermo-couple  
 6 Cables Accessories  
 7 Viewports Fiberoptic  
 8 Valves  
 9 Motion Manipulation  
 10 Process Control  
 11 CF Hardware  
 12 KF Hardware  
 13 ISO-K Hardware  
 14 Adaptors Specials  
 15 HV / UHV Chambers  
 16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

## High Vacuum Plugs and Sockets

### Air Side Sockets

High Vacuum Connectors (glass filled polymer with a stainless steel outer) are suitable for High Vacuum ( $10^{-8}$  mbar) and temperatures up to 110°C.

To be used with our crimp pins, see opposite page.  
 The Air side connectors with housings are limited to 65°C  
 Connectors for High Density and Mixed Sub-D are listed on page 1.10.



#### General Specification HV Sub-D Connectors

Vacuum	High Vacuum
Socket type	Female- fits Feedthroughs & Male Plugs (for internal connections)
Body material	DAP
S types	reduced outer SS part
SX types	no Vac. side locking screws
Temp. range	-55°C to 110°C
Use Pins	212-PINF, -PINF-B, -PINF-S, -PINF-TC
(Male types)	212-PINM-10, -PINM-S, -PINM-TC

#### High vacuum Sockets for Sub-D Female type to fit Feedthroughs

VACUUM	NO. OF POLES	PART NUMBER	EURO
HV	9	211-FS09-HV	49,00
HV	9	211-FS09-HV-SX	49,00
HV	15	211-FS15-HV	52,00
HV	15	211-FS15-HV-S	57,00
HV	25	211-FS25-HV	60,00
HV	25	211-FS25-HV-SX	62,00
HV	37	211-FS37-HV	75,00
HV	37	211-FS37-HV-SX	77,00
HV	50	211-FS50-HV	87,00
HV	50	211-FS50-HV-S	92,00

SX versions without metal housing (see photo on the left)



211-FS15-HV-S



211-FS09-HV-SX

#### High Vacuum Plugs for Sub-D Male Ceramic Plugs to fit female Sockets

VACUUM	NO. OF POLES	PART NUMBER	EURO
HV	9	211-MS09-HV	42,00
HV	15	211-MS15-HV	46,00
HV	25	211-MS25-HV	54,00
HV	37	211-MS37-HV	68,00
HV	50	211-MS50-HV	78,00

The Vacuum side HV housings include Strain Relief and fixing screws for the F/T. They are specially designed to fit the Allectra Sub-D Feedthroughs.

#### High vacuum Housings for Sub-D for Male and Female Connectors

VACUUM	NO. OF POLES	PART NUMBER	EURO
HV	9	211-HSG-D09-SR	32,00
HV	15	211-HSG-D15-SR	33,00
HV	25	211-HSG-D25-SR	37,00
HV	37	211-HSG-D37-SR	42,00
HV	50	211-HSG-D50-SR	46,00

Housings for small "S"- Types on request

#### Air side Sockets with housing for Sub-D Female type to fit Feedthroughs

VACUUM	NO. OF POLES	PART NUMBER	EURO
AIR	9	211-FS09-AIR	9,00
AIR	15	211-FS15-AIR	10,00
AIR	25	211-FS25-AIR	11,00
AIR	37	211-FS37-AIR	15,00
AIR	50	211-FS50-AIR	16,00

Male versions available on request



211-HSG-D50-SR



211-HSG-D15-SR



211-FS09-AIR with Solder pins

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  
 Hardware  
 CF  
 11  
 Hardware  
 KF  
 12  
 Hardware  
 ISO-K  
 13  
 Adaptors  
 Specials  
 14  
 HV / UHV  
 Chambers  
 15  
 Bi-Metal  
 Atlas  
 16



## Crimp Pins for Sub-miniature D Plugs & Sockets

As well as the Standard Crimp Pins, Allectra offers other versions for special purposes:

- Small versions for wires down to 0.08mm
- Budget versions without additional Stainless Steel outer
- Zero-magnetic pins and Ni-plated pins are available on request.

### General Specification CRIMP PINS

Vacuum	High Vacuum and UHV
Material	Gold plated copper alloy
SS shell	Standard and Small type only
Wire size	0.25 – 1.0 mm (Standard + Budget)
Small	0.08 to 0.5 mm (Small)
Crimp tool	214-CTOOL-SUB-D (wires >0.35mm) 214-CTOOL (no SMALL pins) 214-CTOOL-HQ (all types)



Female Budget pins



To connect a Crimp Pin directly to a Feedthrough without using a connector, the special "-NH" pins are recommended. These avoid the risk of the Pin tip touching ground.



3 different crimp tools:  
214-CTOOL-SUB-D



214-CTOOL



214-CTOOL-HQ



214-CRIMPINS



Small pins (left) and Standard Pins (right)

### Crimp Pins for Sub-D Fits HV and UHV Female Sockets

TYPE	No. PER PKT.	PART NUMBER	EURO
STANDARD	10	212-PINF-10	13,00
STANDARD	15	212-PINF-15	19,00
STANDARD	25	212-PINF-25	27,00
BUDGET	10	212-PINF-10-B	11,00
BUDGET	25	212-PINF-25-B	23,00
SMALL	10	212-PINF-10-S	14,00
SMALL	25	212-PINF-25-S	29,00

### Crimp Pins for Sub-D Fits HV and UHV Male Plugs

TYPE	No. PER PKT.	PART NUMBER	EURO
STANDARD	10	212-PINM-10	8,00
STANDARD	25	212-PINM-25	17,00
SMALL	10	212-PINM-10-S	9,00
SMALL	25	212-PINM-25-S	19,00

### Crimp Pins for Sub-D Special pins for use without Sockets

TYPE	No. PER PKT.	PART NUMBER	EURO
STANDARD	10	212-PINF-10-NH	12,00
STANDARD	25	212-PINF-25-NH	26,00

### Crimp Tool for Sub-D For all HV and UHV types

TYPE	No. PER PKT.	PART NUMBER	EURO
BUDGET	1	214-CTOOL-SUB-D	98,00
HIGH QUALITY	1	214-CTOOL-HQ	511,00

### Crimp Tool for Sub-D Not suitable for "S" types

TYPE	No. PER PKT.	PART NUMBER	EURO
STANDARD	1	214-CTOOL	211,00

### Pin demounting Tool for Sub-D ONLY FOR HV TYPES

TYPE	No. PER PKT.	PART NUMBER	EURO
DEMOUNT	1	214-CRIMPINS	25,00

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

- 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

## Connectors for Sub-D

Here the following special purpose Connectors are listed:

- Air side Adapters female to female
- Air and Vacuum connectors for High Density Sub-D
- Air and Vacuum connectors for MIXED Sub-D

The connectors for the standard Sub-D Feedthroughs are listed on page 1.7 and 1.8



These adaptors are for use on the air side of Standard Sub-D Feedthroughs. With these adaptors the Air Side of the Feedthrough becomes Female allowing the use of conventional Male to Female cables on the Air Side.



High Density Vacuum Connectors include 26 Female Crimp Pins. Air Side Connectors are solder type.



The Combination Sub-D Feedthroughs (page 12) have 5 Standard Pins and 2 additional ones which are either Power(P) or Co-axial (CX). The Combination Connectors shown opposite fit both types.

Combination Sockets for Vacuum use include 5 Standard Pins (212-PINF). 2 additional Pins (either POWER or COAX type) should be ordered as required.



### Polarity adaptors for Sub-D Air side Female to Female

VACUUM	No. OF PINS	PART NUMBER	EURO
AIR	9	211-D09-ADR	18,00
AIR	15	211-D15-ADR	21,00
AIR	25	211-D25-ADR	28,00
AIR	37*	211-D37-ADR	POR
AIR	50*	211-D50-ADR	POR

\*) Short cable adaptor

### Sub-D High Density Connectors and Pins

TYPE	NO. OF PINS	PART NUMBER	EURO
Air Socket*	26	211-FS26-AIR	12,00
HV/UHV Socket*	26	211-FS26-PK	179,00
* includes Solder tags or Pins			
Pin female	10	212-PINFHD-10	15,00
Pin female	26	212-PINFHD-26	32,00
Pin male	10	212-PINMHD-10	15,00
Pin male	26	212-PINMHD-26	32,00

### Connectors for COMBINATION Sub-D, Female and Male, POWER PINS (P) & COAX PINS (CX)

TYPE	NO. OF PINS	PART NUMBER	EURO
Air Socket	2P/CX +5	211-FX15-2x5-AIR	9,00
Air Plug	2P/CX +5	211-MX15-2x5-AIR	9,00
HV Socket*	2P/CX +5	211-FX15-2x5-HV	62,00
HV Plug	2P/CX +5	211-MX15-2x5-HV	62,00
UHV Socket*	2P/CX +5	211-FX15-2x5-PK	162,00

\* includes 5 standard Female Pins (212-PINF type)

Female P Pin	1 off	212-POWER-F	3,50
Male P Pin	1 off	212-POWER-M	3,00
Female CX Pin	1 off	212-COAX-F	24,00
Male CX Pin	1 off	212-COAX-M	25,00

Male connectors can be used for in-vacuum connections

### Pin Removal Tool for Power / Coax Pins

TYPE	PART NUMBER	EURO
Pin Removal tool	214-EXT-POWER	136,00

NEW!

## Sub-miniature D Feedthroughs for use with K type Thermocouples

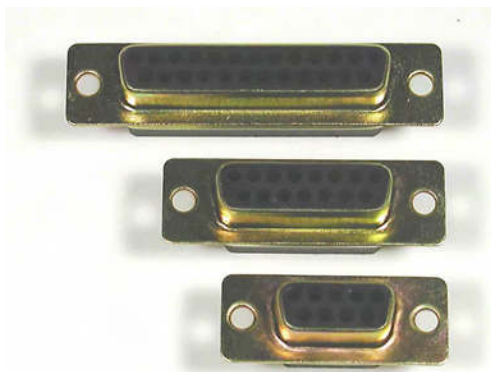
Sub-D F/Ts may be used for T/Cs. A Standard D-Type Feedthrough is used but the Air and Vacuum side Pins are changed to T/C types. Although the use of standard Pin material in contact with the T/C Pins results in the creation of two T/C junctions, the measurement error introduced is negligible provided the vacuum side of the Feedthrough contacts and the air side are at the same temperature. Tests showed a maximum error of less than 0.5K

### General Specification K type T/C Crimp Pins

Vacuum/ Air Material	High Vacuum and UHV K Type Chromel and Alumel pairs Type N and T available on request
Fits wire	0.25 – 0.6 mm
Crimp tool	214-CTOOL-TC or 214-CTOOL-TC-HQ
Pack contents	5 Pairs (5 pieces Chromel and 5 pieces Alumel)

If a high accuracy temperature measurement is required, the use of a Platinum Resistance Thermometer is recommended. See Sec. 6

Other Crimp Pins - See Sec. 4 and Sec. 5



Air side housings for Thermocouple Pins. A housing is included in the pack.



### K Type Thermocouple Crimp Pins for Sub-D Fits HV and UHV Female Sockets for Feedthroughs

TYPE	No. PER PKT.	PART NUMBER	EURO
K, Female	2x5	213-PINF-K	49,00



### K Type Thermocouple Crimp Pins for Sub-D Fits HV and UHV Male Plugs

TYPE	No. PER PKT.	PART NUMBER	EURO
K, Male	2x5	213-PINM-K	49,00



### Thermocouple Pin Crimp Tool for Sub-D For all HV and UHV types

TYPE	No. PER PKT.	PART NUMBER	EURO
Standard	1	214-CTOOL-TC	29,00
High Quality	1	214-CTOOL-TC-HQ	254,00



214-CTOOL-TC-HQ



214-CTOOL-TC

### Air side Thermocouple Sockets for Sub-D Fit to K Type Thermocouple Pins

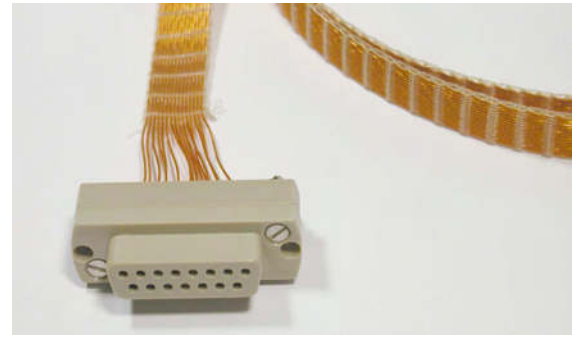
TYPE	SIZE	PART NUMBER	EURO
AIR	9	211-FS09-ATC	18,00
AIR	15	211-FS15-ATC	21,00
AIR	25	211-FS25-ATC	25,00
AIR	37	211-FS37-ATC	28,00
AIR	50	211-FS50-ATC	31,00

- 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

## Sub-D ready made In-Vacuum Cables

Alllectra offers a full range of vacuum cables including both standard types and cables made to customers' specifications. The standard cable lengths is 0.5 m. Any desired length available.

Please note that only cables with one connector are listed here. The other end is left open. All other types are available on request.



### Specifications Standard In-Vacuum Cables

Vacuum	HV or UHV
Socket type	PEEK, Ceramic or HV
Construction	Kapton Ribbon Cable/ PTFE
Current	3A max
Voltage	500V DC
Temp.	Defined by connectors

Please supply us with your requirements for custom cables:  
 Type of connectors, cable, with or without housing, shielding, length ....

An example of a custom cable is shown below.



Custom made HV-Cable with one "Small" connector, housings and complete shielding. Please ask for a quote for your special application.

### In-vacuum PTFE Ribbon Cable for Sub-D HV Socket to open end, 500mm long

VACUUM	No OF WIRES	PART NUMBER	EURO
HV (PTFE)	9	380-D09FXHPT-500	98,00
HV (PTFE)	15	380-D15FXHPT-500	140,00
HV (PTFE)	25	380-D25FXHPT-500	175,00
HV (PTFE)	37	380-D37FXHPT-500	POR
HV (PTFE)	50	380-D50FXHPT-500	POR

### In-Vacuum KAPTON Ribbon Cable for Sub-D HV Socket to open end, 500mm long

VACUUM	No. OF PINS	PART NUMBER	EURO
HV	9	380-D09FXHR-500	143,00
HV	15	380-D15FXHR-500	178,00
HV	25	380-D25FXHR-500	229,00
HV	37	380-D37FXHR-500	344,00
HV	50	380-D50FXHR-500	418,00

### In-Vacuum KAPTON Ribbon Cable for Sub-D PEEK Socket to open end, 500mm long

VACUUM	No. OF PINS	PART NUMBER	EURO
HV/UHV	9	380-D09FXPR-500	224,00
HV/UHV	15	380-D15FXPR-500	282,00
HV/UHV	25	380-D25FXPR-500	335,00
HV/UHV	37	380-D37FXPR-500	472,00
HV/UHV	50	380-D50FXPR-500	548,00

### In-Vacuum KAPTON Ribbon Cable for Sub-D UHV Ceramic Socket to open end, 500mm long

VACUUM	No. OF PINS	PART NUMBER	EURO
UHV	9	380-D09FXUR-500	264,00
UHV	15	380-D15FXUR-500	328,00
UHV	25	380-D25FXUR-500	397,00
UHV	37	380-D37FXUR-500	528,00
UHV	50	380-D50FXUR-500	625,00

### Sub-D KAPTON Ribbon Cable - Extension lengths for all Kapton Ribbon cables

No. OF WIRES	LENGTH	PART NUMBER	EURO
9	+500 mm	380-EXT-09	37,50
15	+500 mm	380-EXT-15	55,00
25	+500 mm	380-EXT-25	77,50
37	+500 mm	380-EXT-37	132,50
50	+500 mm	380-EXT-50	155,00

**REDUCED**

- 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

Circular Miniature (CM) and Dual In-line (DIL) Feedthroughs



**2.1 CM FEEDTHROUGHS**

-> Page 2.2

12 and 19 Pin Circular Miniature Feedthroughs  
 6 Pin High Current Versions  
 Flanged versions CF and weldables



**2.1 CM SETS**

-> Page 2.3

Circular Miniature Feedthrough Sets  
 12 and 19 pin types  
 6 Pin high current types  
 include Air and Vacuum Sockets



**2.3 CM: CONNECTORS**

-> Page 2.4

Industry standard air side sockets  
 PEEK vacuum side sockets



**2.4 CM: IN-VACUUM CABLES**

-> Page 2.5

Vacuum ready cables for the Circular Miniature Feedthroughs  
 with housing and strain relief,  
 optional with shielding



**2.5 DUAL IN-LINE (DIL)**

-> Page 2.6

Dual In-line Feedthroughs  
 for direct connection to PCBs



**TOOLS FOR CABLE STRIPPING AND CRIMPING**

-> Sec. 6

- 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

### 12 & 19 Pin Circular Miniature Feedthroughs 6 Pin High Current versions

Based on the shell size of DIN connectors, Allectra offers compact feedthroughs with 12 and 19 Pins. Additionally a 6 way High Current version is available. The Industry Standard Air Side connectors are shielded and EMC compliant. All Air Side Connectors are screw-on type. If used with the Vacuum Side Housing, a fully shielded connection from air to vacuum is possible.



220-CM12-C40-2  
 air side view

#### Specifications

Compliance	IEC60130-9
Pin Diameter	1.6mm (6 pin) / 1.0mm (12+19 pin)
Test Voltage	500V DC (pin to pin / pin to GND)
Current	5A (6 pin) / 3A (12 and 19 pin)
Temp.	-200°C to 220°C
Leak rate	<math>5 \times 10^{-10}</math> mbar l/s He

#### Circular Miniature Feedthroughs 6 Pin High Current Versions

FLANGE	No. OF PINS	PART NUMBER	EURO
WELD	6	220-CM6	170,00
16CF	6	220-CM6-C16	180,00
40CF	6	220-CM6-C40	225,00
40CF	12 (2x6)	220-CM6-C40-2	420,00
63CF	12 (2x6)	220-CM6-C63-2	425,00
63CF	18 (3x6)	220-CM6-C63-3	630,00

#### Circular Miniature Feedthroughs 12 Pin Versions

FLANGE	No. OF PINS	PART NUMBER	EURO
WELD	12	220-CM12	230,00
16CF	12	220-CM12-C16	245,00
40CF	12	220-CM12-C40	285,00
40CF	24 (2x12)	220-CM12-C40-2	545,00
63CF	24 (2x12)	220-CM12-C63-2	550,00
63CF	36 (3x12)	220-CM12-C63-3	825,00

#### Circular Miniature Feedthroughs 19 Pin Versions

FLANGE	No. OF PINS	PART NUMBER	EURO
WELD	19	220-CM19	295,00
16CF	19	220-CM19-C16	320,00
40CF	19	220-CM19-C40	340,00
40CF	38 (2x19)	220-CM19-C40-2	675,00
63CF	38 (2x19)	220-CM19-C63-2	680,00
63CF	57 (3x19)	220-CM19-C63-3	1,020,00



Weldable versions: 220-CM19 and 220-CM12  
 Required welding diameter is 21.3mm



220-CM12-C16 air side view

The CM Feedthroughs are designed for 16CF flanges. On larger flanges they can be used in combination with other types like Coaxial Feedthroughs or Sub-Ds.

Versions on KF flanges are available on request, smallest flange size is 25KF

- 1 Sub-D
- 2 CM + DIL
- 3 Coax
- 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

**Circular Miniature (CM) Feedthrough Sets include Air and Vacuum Side Sockets**

The sets contain:

- Air side connector
- Vacuum feedthrough
- Vacuum side connector including pins
- Vacuum side housing with strain relief

(If no housing should be used, the parts can be ordered separately)

**General Specifications**

Vacuum	UHV
Temp. Vacuum Socket	-200°C to 220°C
Temp. Air Socket	85°C
Current 6 Pin type	5A
Current 12 & 19 Pins	3A
Test Voltage	500V DC
Rated Voltage	60V AC / 250V (6 Pin Type)
Thread size connector	M16



220-CM19-C16 with air side connector



Custom flange with 4x12 way CM Feedthroughs on a 63CF flange

The Sets listed here contain the vacuums side housings with strain relief. On request also sets without the housings are available for the 6-pin versions.



**6 Pin High Current Circular Miniature F/T Sets on CF Flanges with Air and Vacuum Connectors** NEW

FLANGE	No. OF PINS	PART NUMBER	EURO
16CF	6	220-SET6-C16-SR	331,00
40CF	6	220-SET6-C40-SR	376,00
40CF	12 (2x6)	220-SET6-C40-2-SR	722,00
63CF	12 (2x6)	220-SET6-C63-2-SR	727,00

Note: KF Sets available on request. Smallest size is 25KF

**12 Pin Circular Miniature Feedthrough Sets on CF flanges with Air and Vacuum Connectors** NEW

FLANGE	No. OF PINS	PART NUMBER	EURO
16CF	12	220-SET12-C16-SR	379,00
40CF	12	220-SET12-C40-SR	419,00
40CF	24 (2x12)	220-SET12-C40-2-SR	814,00
63CF	24 (2x12)	220-SET12-C63-2-SR	819,00

Note: KF Sets available on request. Smallest size is 25KF

**19 Pin Circular Miniature Feedthrough Sets on CF flanges with Air and Vacuum Connectors** NEW

FLANGE	No. OF PINS	PART NUMBER	EURO
16CF	19	220-SET19-C16-SR	488,00
40CF	19	220-SET19-C40-SR	508,00
40CF	38 (2x19)	220-SET19-C40-2-SR	1015,00
63CF	38 (2x19)	220-SET19-C63-2-SR	1020,00

Note: KF Sets available on request. Smallest size is 25KF

**Circular Miniature Feedthrough Housings - Spare parts -** REDUCED

No. OF PINS	PART NUMBER	EURO
6	220-SR6	59,00
12/ 19	220-SR	59,00



220-SR Housing with Strain Relief clamp

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

### CM Series Air and Vacuum Sockets

#### PEEK Vacuum Side Sockets

- PEEK UHV Vacuum Side Sockets, 6, 12 or 19 way
  - SS Housings with strain relief
  - Air Side Sockets 6, 12 or 19 way
  - Straight or 90° Air Side Connector
- Allectra recommends the use of the housing for handling

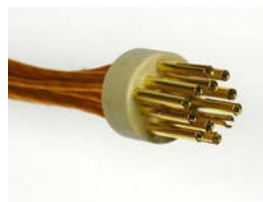


#### Specifications

Vacuum:	UHV
Materials	PEEK, Stainless steel
Current 6 Pin type	5A
Current 12/19 Pin type	3A
Temp. Vacuum Sockets	-200°C to 220°C
Temp. Air Sockets	-25°C to 85°C

#### Vacuum Sockets including Standard Pins STANDARD type (without housing)

No. OF PINS	TYPE	PART NUMBER	EURO
6	STANDARD	220-CON6	78,00
12	STANDARD	220-CON12	88,00
19	STANDARD	220-CON19	118,00



Back shell with pins during assembly

#### Vacuum Sockets including Standard Pins Type with Housing and Strain Relief

**REDUCED**

No. OF PINS	TYPE	PART NUMBER	EURO
6	HOUSING	220-CON6-SR	137,00
12	HOUSING	220-CON12-SR	147,00
19	HOUSING	220-CON19-SR	177,00



#### Specifications Pins

Vacuum:	UHV
Materials	Phospor Bronze / BeCu Gold plated
Wire Diameter Standard	0.6 ... 1.0mm ø
Small	0.25 ... 0.6mm ø
Connection	crimp or solder

#### Replacement Pins Standard and Small Types

TYPE	QTY	PART NUMBER	EURO
Standard	12	220-CM-PINF-12	19,00
Standard	20	220-CM-PINF-20	29,00
Small	12	220-CM-PINF-12-S	21,00
Small	20	220-CM-PINF-20-S	31,00

The 6-pin Versions use the pins 360-CRBC-1.6  
 See page 52!

#### Air Side Sockets Straight and 90° types

No. OF PINS	TYPE	PART NUMBER	EURO
6	STRAIGHT	220-CON6-AIR	15,00
6	90°	220-CON6-AIR90	22,00
12	STRAIGHT	220-CON12-AIR	17,00
12	90°	220-CON12-AIR90	24,00
19	STRAIGHT	220-CON19-AIR	24,00
19	90°	220-CON19-AIR90	32,00



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



## Vacuum Ready Cables for Circular Miniature (CM) Series

- Kapton wire bundles, 6, 12 and 19 way
- UHV Cable lengths of 0.25m and 0.5m as standard
- Right Angle and Straight Air Side cables

The standard Kapton Wire is 311-KAPM-075 (see page 62) for 12- and 19-Pin, alternatively KAPM-060 and KAPM-100 types are available to order.  
 6-Pin version uses 311-KAPM-100

### Specifications

Vacuum Side Cables	UHV
Temp.	-200°C to 250°C
Materials	Kapton coated Copper (311-KAPM-075 for 12-/19-Pin) Peek, Stainless Steel
Air Side Cables	
Temp.	-40°C to 80°C
Materials	PVC isolated Copper



Top: Cable without fitted Housing

Top of page: Cable with Housing and Strain Relief Socket

Left: Cable with Housing and Strain Relief Socket + Braid

## Air Side Cables



### Air Side Cables per Meter Shielded cables (without connectors)

NEW

NR. PINS	LENGTH	PART NUMBER	EURO
6 (3x2)	1 m	314-CAB6-AIR	5,00
6	1 m	314-CAB6-AIR-HC*	10,00
12 (6x2)	1 m	314-CAB12-AIR	9,00
20 (10x2)	1 m	314-CAB20-AIR	11,00

\*) High Current cable with 6x 0.75mm<sup>2</sup>, shielded  
 Other cables: Shielded Twisted Pair 0.14mm<sup>2</sup>



### Vacuum Ready Cable for CM Series with STRAIN RELIEF Socket

NEW

No. OF PINS	LENGTH	PART NUMBER	EURO
6	250	380-CM6-250-SR	224,00
6	500	380-CM6-500-SR	254,00
12	250	380-CM12-250-SR	304,00
12	500	380-CM12-500-SR	341,00
19	250	380-CM19-250-SR	404,00
19	500	380-CM19-500-SR	444,00

### Vacuum Ready Cable for CM Series with STRAIN RELIEF and BRAIDED CABLE

REDUCED

No. OF PINS	LENGTH	PART NUMBER	EURO
6	250	380-CM6-250-SRB	242,00
6	500	380-CM6-500-SRB	272,00
12	250	380-CM12-250-SRB	322,00
12	500	380-CM12-500-SRB	359,00
19	250	380-CM19-250-SRB	422,00
19	500	380-CM19-500-SRB	462,00

### Vacuum Ready Cable for CM Series Socket without housing

No. OF PINS	LENGTH	PART NUMBER	EURO
6	250	380-CM6-250	165,00
6	500	380-CM6-500	195,00

### Air Side Cable for CM Series With mounted STRAIGHT plug

No. OF PINS	LENGTH	PART NUMBER	EURO
6	1 m	220-CAB6-AIR	38,00
6 (HC)	1 m	220-CAB6-AIR-HC	44,00
12	1 m	220-CAB12-AIR	47,00
19	1 m	220-CAB19-AIR	159,00

HC = High current

### Air Side Cable for CM Series With mounted RIGHT ANGLE plug

No. OF PINS	LENGTH	PART NUMBER	EURO
6	1 m	220-CAB6-AIR90	40,00
12	1 m	220-CAB12-AIR90	46,00
19	1 m	220-CAB19-AIR90	POR

You can get cables in all desired lengths! Above are cables in 1m length. For each additional 1m add the cable costs from the list on the left

- 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

## Dual In-line Feedthroughs

### for direct connection to Printed Circuit Boards

This special F/T allows direct connection to PCB on either Air or Vacuum side. Typically the electronic board is connected to the air side to give the shortest signal path. Up to 3 Feedthroughs will fit onto a 63CF flange.

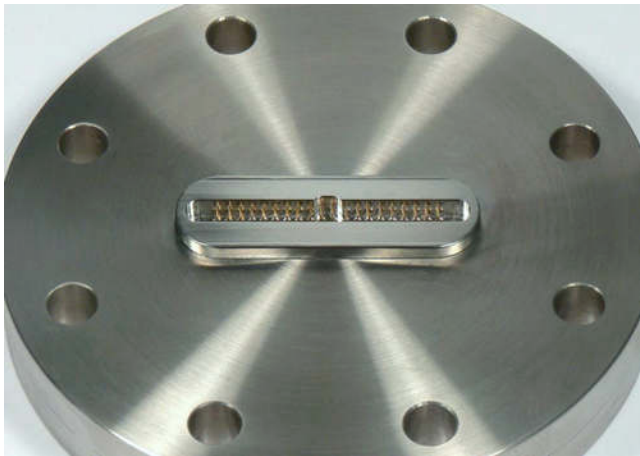


#### Specifications

Vacuum	UHV
Materials	Stainless Steel/ Glass Ceramic
Temp.	-40°C to 230°C
Current per pin	1A
Pin spacing	2mm pitch

#### Dual In-line Feedthroughs 2mm x 2mm pitch

FLANGE	No. OF PINS	PART NUMBER	EURO
WELD	40	230-DIL40M	358,00
63CF	40	230-DIL40M-C63	590,00
63CF	80	230-DIL80M-C63-2	980,00
63CF	120	230-DIL120M-C63-3	1.450,00
100CF	40	230-DIL40M-C100	625,00
100CF	80	230-DIL80M-C100-2	1.030,00
100CF	120	230-DIL120M-C100-3	1.510,00
100CF	160	230-DIL160M-C100-4	1.850,00



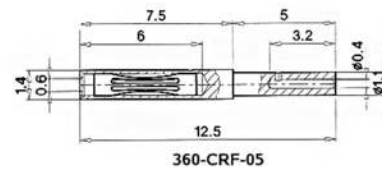
230-DIL40M-C63

#### Dual In-line Feedthroughs Connectors for Air and Vacuum

VACUUM	TYPE	PART NUMBER	EURO
AIR	IDC	230-CON40M-IDC-AIR	5,00
AIR	SOLDER	230-CON40M-W-AIR	5,00
VACUUM	PEEK	230-CON40M-PK	194,00

#### Dual In-line Feedthroughs Pins for vacuum side

VACUUM	No. PER PKT	PART NUMBER	EURO
VACUUM	10	360-CRF-05-10	45,00
VACUUM	40	360-CRF-05-40	130,00



#### Dual In-line Feedthroughs Air side ribbon cable 1m

VACUUM	LENGTH	PART NUMBER	EURO
AIR	1 m	314-RIB40-1-AIR	18,00

Housings for Dual In-line Feedthroughs for Vacuum are available on request.



Crimp pin  
360-CRF-05



Vacuum side  
connector



Vacuum side  
connector with  
optional housing

- 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

Coaxial BNC/ SMA/ MHV/ Safe High Voltage (SHV), Type N, Microdot Feedthroughs



**3.1 COAXIAL: BNC**

-> Page 3.2

Standard BNC Feedthroughs, Single and Double Sided  
 Grounded and Floating Shield  
 BNC Vacuum Ready Cables



**3.2 COAXIAL: BNC 50Ω**

-> Page 3.3

50Ω BNC Feedthroughs  
 Single and Double Sided  
 Grounded and Floating Shield



**3.3 COAXIAL: SMA 18GHz**

-> Page 3.4

SMA 50Ω Miniature Coaxial Feedthroughs, Standard and G18 Series  
 Single and Double Sided  
 SMA Connectors and Ready Made Cables

NEW



**3.4 COAXIAL: MHV**

-> Page 3.6

MHV Standard and 50Ω Feedthroughs  
 Single and Double Sided  
 MHV Vacuum Ready Cables



**3.5 COAXIAL: 50Ω SMB**

-> Page 3.7

SMB Miniature 50Ω Coaxial Feedthroughs  
 Single and Double Sided  
 SMB Vacuum Ready Cables



**3.6 COAXIAL: SHV**

-> Page 3.8

Safe High Voltage (SHV) 5KV Feedthroughs  
 Standard and 50Ω types, Single and Double Sided  
 SHV Vacuum Ready Cables



**3.7 COAXIAL: SHV10 & SHV20**

-> Page 3.10

Safe High Voltage 10KV(SHV10) Feedthroughs  
 Safe High Voltage 20KV(SHV20) Feedthroughs



**3.8 COAXIAL: TYPE K 40GHz**

-> Page 3.11

Type K 40GHz Bulkhead Feedthrough



**3.9 COAXIAL: TYPE N and 7/16**

-> Page 3.12

50Ω Type N Feedthroughs  
 Type N Vacuum Ready Cables  
 7/16 High Vacuum Feedthrough

NEW



**3.10 COAXIAL: MICRODOT**

-> Page 3.13

Microdot Crystal Sensor Feedthroughs and Vacuum Ready Cables  
 for use with Film Thickness Monitors



**3.11 COAXIAL: CONNECTORS**

-> Page 3.14

Plugs & Sockets for Coaxial Feedthroughs

- 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

## Standard BNC Feedthroughs, Single & Double Sided Grounded & Floating Shield / BNC Vacuum Cables

Standard BNC feedthroughs are a general purpose coaxial economic solution where defined impedance and high voltage are not required.

- Up to 4 Feedthroughs fit on a 40 CF or 40 KF flange
- Single or Double Sided
- In-Vacuum cables are available for both types



### General Specification 241-BNC(D)

Type	Grounded Shield BNC
Impedance	not matched
Pin-ø	2.4 mm (for single sided types)
Voltage	500V DC
Current	3A
Temp.	-200°C to 450°C
Leak rate	<5x10 <sup>-10</sup> mbar l/s
Air Side Connectors are included (for RG58 cable)	

### BNC Standard Type 500V Coaxial GROUNDED SHIELD 1 to 4 pins SINGLE SIDED, CF and KF flanges **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	241-BNC	32,00
16CF	1	241-BNC-C16	70,00
40CF	1	241-BNC-C40	90,00
40CF	2	241-BNC-C40-2	135,00
40CF	3	241-BNC-C40-3	180,00
40CF	4	241-BNC-C40-4	225,00
16KF	1	241-BNC-K16	70,00
40KF	1	241-BNC-K40	90,00
40KF	2	241-BNC-K40-2	125,00
40KF	3	241-BNC-K40-3	180,00
40KF	4	241-BNC-K40-4	225,00
50KF	4	241-BNC-K50-4	228,00

Air side sockets are included

### Co-axial In-Vacuum Cables, IVCX type for SINGLE SIDED BNC

LENGTH MM	SOCKETS	PART NUMBER	EURO
500 mm	1	380-IVCX-500	210,00
1000 mm	1	380-IVCX-1000	225,00

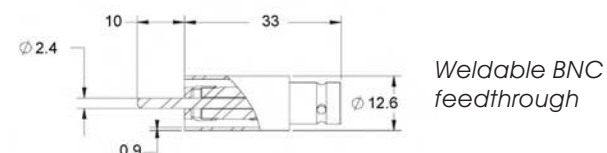
### BNC Standard Type 500V Co-axial GROUNDED SHIELD 1 to 4 pins DOUBLE SIDED CF and KF flanges **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	241-BNCD	165,00
16CF	1	241-BNCD-C16	220,00
40CF	2	241-BNCD-C40-2	400,00
63CF	4	241-BNCD-C63-4	740,00
16KF	1	241-BNCD-K16	220,00
40KF	1	241-BNCD-K40	230,00

Air side sockets are included

### BNC Co-axial Cable for DOUBLE SIDED types In-Vacuum Socket with Co-axial Kapton cable

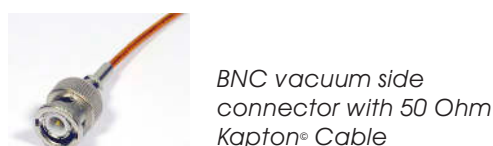
LENGTH MM	SOCKETS	PART NUMBER	EURO
NONE	SOCKET ONLY	245-CON-BNC	44,00
500 mm	1	380-BNC-MX-500	101,00
1000 mm	1	380-BNC-MX-1000	124,00
500 mm	2	380-BNC-MM-500	162,00
1000 mm	2	380-BNC-MM-1000	181,00



IVCX cables fit single sided BNC feedthroughs.



241-BNCD Dimensions	
Weld ø:	19 mm
In Vacuum Length	43 mm for weldable 40 mm for CF40 29 mm for CF16



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

**50 Ω BNC F/T, Single & Double Sided**

**Grounded & Floating Shield**

The 50 Ω BNC feedthroughs are suitable for high frequencies. The double sided can be used up to 4 GHz.

- True 50 Ohm Feedthroughs
- High frequency up to 4 GHz
- Air Side sockets included
- In-Vacuum Cables available for both types

**General Specification 242-BNC50(DF)**

Type	50 Ohm BNC
Frequency	100 MHz single sided 4 GHz double sided
Pin-∅	2.4mm, 13mm long (single sided)
Voltage	500V DC (limited by plug)
Current	3A
Temp.	-200°C to 300°C
Leak rate	<5x10 <sup>-10</sup> mbar l/s
Air Side Connectors are included (for RG58 cable)	



Weldable single sided 50 Ohm BNC F/T

Weld Diameter:  
 Single sided grounded: 9.6 mm  
 All other types: 16.5 mm  
 All BNC feedthroughs include an air side connector for standard RG58 cable



Weldable double sided BNC50

Please ask for a quote if you need more feedthroughs on one flange or assemblies including other feedthroughs types.

Weldable single sided floating BNC50 F/T



Double sided floating shield BNC50 on 16CF Flange

**BNC 50 Ohm 500V Coaxial GROUNDED SHIELD 1 to 4 pins SINGLE SIDED CF and KF flanges**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-BNC50	118,00
16CF	1	242-BNC50-C16	165,00
40CF	1	242-BNC50-C40	170,00
40CF	2	242-BNC50-C40-2	310,00
40CF	3	242-BNC50-C40-3	450,00
40CF	4	242-BNC50-C40-4	580,00
16KF	1	242-BNC50-K16	158,00
40KF	1	242-BNC50-K40	160,00
40KF	2	242-BNC50-K40-2	305,00
40KF	3	242-BNC50-K40-3	445,00
40KF	4	242-BNC50-K40-4	575,00

Air side connectors are included

**BNC 50 Ohm 500V Coaxial GROUNDED SHIELD 1 to 4 pins DOUBLE SIDED CF and KF flanges**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-BNCD50	208,00
16CF	1	242-BNCD50-C16	277,00
40CF	2	242-BNCD50-C40-2	504,00
40CF	3	242-BNCD50-C40-3	798,00
16KF*	1	242-BNCD50-K16	277,00
40KF	2	242-BNCD50-K40-2	504,00

Air side connectors are included

\*) The 16KF version requires the use of an Outer Centring Ring

**BNC 50 OHM 500V Coaxial FLOATING SHIELD SINGLE and DOUBLE SIDED, CF Flanges**

FLANGE	PINS	PART NUMBER	EURO
WELD	1 SINGLE	242-BNCF50	205,00
16CF	1 SINGLE	242-BNCF50-C16	233,00
40CF	2 SINGLE	242-BNCF50-C40-2	450,00
40CF	3 SINGLE	242-BNCF50-C40-3	782,00
WELD	1 DOUBLE	242-BNCF50	305,00
16CF	1 DOUBLE	242-BNCF50-C16	386,00
40CF	1 DOUBLE	242-BNCF50-C40	392,00
40CF	2 DOUBLE	242-BNCF50-C40-2	682,00

Air side connectors are included

KF version 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

## SMA 50 Ω Miniature Co-axial Feedthroughs

### 18GHz High Frequency version

- True 50Ω, DC to 6.5GHz or 18GHz
- Miniature size - up to 4 Feedthroughs fit onto a 40CF or 40KF flange
- SMA is available Double Sided with both internal and external 50Ω plugs.



#### SMA High Frequency 50 Ohm Feedthrough SINGLE SIDED - GROUNDED SHIELD

FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-SMA50	226,00
16CF	1	242-SMA50-C16	292,00
40CF	1	242-SMA50-C40	299,00
40CF	2	242-SMA50-C40-2	537,00
40CF	3	242-SMA50-C40-3	771,00
40CF	4	242-SMA50-C40-4	995,00

Versions on KF flanges are also available

#### SMA High Frequency 50 Ohm Feedthrough DOUBLE SIDED - GROUNDED SHIELD

FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-SMAD50	320,00
16CF	1	242-SMAD50-C16	395,00
40CF	1	242-SMAD50-C40	403,00
40CF	2	242-SMAD50-C40-2	730,00
40CF	3	242-SMAD50-C40-3	1,045,00
40CF	4	242-SMAD50-C40-4	1,460,00

Versions on KF flanges are also available

#### SMA High Frequency 50 Ohm Feedthrough DOUBLE SIDED - FLOATING SHIELD

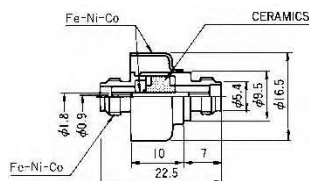
FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-SMADF50	365,00
16CF	1	242-SMADF50-C16	440,00
40CF	1	242-SMADF50-C40	447,00
40CF	2	242-SMADF50-C40-2	812,00
40CF	3	242-SMADF50-C40-3	1,177,00
40CF	4	242-SMADF50-C40-4	1,630,00

Versions on KF flanges are also available



Weldable SMA Feedthroughs:

- left- Single Sided Grounded Shield
- center- Double Sided Grounded Shield
- right- Double Sided Floating Shield



Dimensions of Floating and Grounded Shield Feedthrough

#### General Specifications

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Temperature	-200°C to 300°C
Electrical	1000V DC, 3A max
Impedance	50 Ohm
Frequency	AC to 6.5 GHz
Pin	1.8 mm $\phi$ , 5 mm long (single sided)
Weld- $\phi$	9.5 mm for 242-SMA50 16.5 mm for 242-SMAD/ SMADF
Connector	Male SMA Plug
Cable	311-KAP50/ KAP50-S

## High Frequency SMAD18G Series

- True 50Ω, DC to 18 GHz
- Miniature size - up to 4 Feedthroughs fit onto a 40CF or 40KF flange
- SMA is available Double Sided with both internal and external 50Ω plugs.
- UHV compatible 18 GHz Cables available for the vacuum side - see next page.



If 18GHz is not enough, Allectra offers microwave F/Ts SMA-K Type (2.92mm) for up to 40 GHz. Please see page 3.11.

#### Specification 242-SMAD18G

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Temp.	-65°C to 200°C
Electrical	1000V DC, 3A max.
Impedance	50Ω
Frequency	DC to 18GHz
VSWR	1.1 + 0.01x f (GHz)
Connectors	Male SMA Plugs
Cable	311-KAP50/KAP50-S/18GHz cable

#### SMA HIGH FREQUENCY, 18GHZ, 50 OHM F/T DOUBLE SIDED - GROUNDED SHIELD

REDUCED

FLANGE	PINS	PART NUMBER	EURO
16KF	1	242-SMAD18G-K16	410,00
16CF	1	242-SMAD18G-C16	412,00
40CF	1	242-SMAD18G-C40	417,00
40CF	2	242-SMAD18G-C40-2	714,00
40CF	3	242-SMAD18G-C40-3	1,036,00
40CF	4	242-SMAD18G-C40-4	1,416,00

**SMA Ready Made Cables**

Allectra offers cables with Male (Plug) and Female (Socket) SMA connectors.

**N.B. Male Plugs fit to Feedthroughs both Vacuum and Air Side.**

Use Female UHV Socket Connectors for In-vacuum coaxial connections

Standard 50Ω Kapton coaxial cable is 311-KAP50

A thinner 50Ω version also available (311-KAP50S).

Cables are available with connectors on one end or on both ends. Standard lengths are 500 mm and 1 m, other lengths can be made on request. Mixed cables with other connectors can be made to order (e. g. SMA to BNC, Microdot, SHV, MHV etc.)



**Specifications Standard SMA cables**

Impedance	50 Ω
Capacitance	~115pF/m
Damping	0.1db/ m @ 100MHz 1.1db/ m @ 500MHz 1.9db/ m @ 1GHz
Cut off frequency	~ 17GHz (measured with 2 x SMA-Socket)
Current	1A
Temp.	-200°C to 220°C
Connectors:	SMA male (fits to f/t) SMA female
Cable used:	311-KAP 50 (ø 2.3mm)
Test voltage:	500V DC
Test Insulation:	Min. 1GΩ pin to shield
Vacuum:	<10 <sup>-10</sup> mbar

**SMA HIGH FREQUENCY 50 OHM CABLE  
Single ended, SMA Plug to open end**

LENGTH	IMPEDANCE	PART NUMBER	EURO
500 mm	50Ω	380-SMA-MX-500	98,00
1000 mm	50Ω	380-SMA-MX-1000	121,00

**SMA HIGH FREQUENCY 50 OHM CABLE  
Double ended, Male Plug to Male Plug**

LENGTH	IMPEDANCE	PART NUMBER	EURO
500 mm	50Ω	380-SMA-MM-500	159,00
1000 mm	50Ω	380-SMA-MM-1000	182,00

Connector dimensions

male:	Max ø	9mm, 31mm length
female:	Max ø	10.1mm, 26mm length

**NEW**

**Specifications 18GHZ SMA cables**

Impedance	50 Ω
Capacitance	97pF/m
Material	PTFE dielectric, outer blank
Damping	0.4db/m @ 1 GHz (cable) 1.5db/m @ 10 GHz 2.25db/m @ 18 GHz
Current	0.5A (DC)
Temp.	-200°C to 220°C
Connectors:	SMA Male (fits to F/T)
Test voltage	500V DC
Test insulation	min 1GΩ pin to shield Typ. 100 GΩ

**SMA 18GHz HIGH FREQUENCY 50 OHM CABLE  
Double ended, Male Plug to Male Plug**

**NEW**

LENGTH	IMPEDANCE	PART NUMBER	EURO
300 mm	50Ω	380-SMA18G-MM-300	216,00
500 mm	50Ω	380-SMA18G-MM-500	224,00

Custom lengths available on request



18 GHz cable

Please ask for the full data sheet

**Specifications thin SMA cables**

Impedance	50 Ω
Capacitance	~120pF/m
Damping	3db/m @ 1 GHz
Current	0.5A (DC)
Temp.	-200°C to 220°C
Connectors:	SMA Male (fits to F/T) (no female connector available)
Cable used:	311-KAP50S (ø 1.45 mm) thin 50 Ohm UHV compatible
Test voltage	500V DC
Test insulation	min 1GΩ pin to shield

**SMA THIN 50 OHM CABLE  
Single ended, SMA plug to open end**

LENGTH	IMPEDANCE	PART NUMBER	EURO
500 mm	50Ω	380-SMA-MX-500-S	89,00
1000 mm	50Ω	380-SMA-MX-1000-S	108,00

**SMA THIN 50 OHM CABLE  
Double ended, Male Plug to Male Plug**

LENGTH	IMPEDANCE	PART NUMBER	EURO
500 mm	50Ω	380-SMA-MM-500-S	142,00
1000 mm	50Ω	380-SMA-MM-1000-S	161,00

- 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

- 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

## MHV Standard and MHV 50Ω Feedthroughs

### MHV Vacuum Ready Cables

MHV (Miniature High Voltage) is a variation of BNC with recessed pin and voltage rating increased to 5KV. The listed non-impedance matched versions are Single Sided, the 50Ω versions are Single Sided, Double Sided and Floating Shield.



#### Specifications MHV Standard Type

Type	Grounded Shield MHV
Impedance	not constant
Pin-ø	2.4mm
Voltage	5KV DC
Current	3A
Temp.	-200°C to 450°C
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Air Side Connectors are included	

#### Specifications MHV 50 Ohm Type

Type	MHV, Grounded Shield, Double Sided and Floating types
Impedance	50Ohm, up to 100MHz
Pin-ø	2.4mm (single sided)
Voltage	5KV DC
Current	3A
Temp.	-200°C to 250°C
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Air Side Connectors are not included	



*Difficult to distinguish: BNC and MHV look very similar. On the left is a BNC, on the right an MHV. The main visible difference is the recessed ceramic inside the MHV F/T.*



245-CON-MHV

#### MHV STANDARD type, 5KV Coaxial, GROUNDED SHIELD 1 to 4 pins SINGLE SIDED, CF and KF flanges REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	241-MHV	37,00
16CF	1	241-MHV-C16	80,00
40CF	1	241-MHV-C40	90,00
40CF	2	241-MHV-C40-2	135,00
40CF	3	241-MHV-C40-3	190,00
40CF	4	241-MHV-C40-4	245,00

KF Versions are available on request

#### MHV 50 Ω, 5KV Coaxial, GROUNDED Shield 1 to 4 pins SINGLE SIDED, CF and KF flanges

FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-MHV50	118,00
16CF	1	242-MHV50-C16	165,00
40CF	1	242-MHV50-C40	170,00
40CF	2	242-MHV50-C40-2	310,00
40CF	3	242-MHV50-C40-3	450,00
40CF	4	242-MHV50-C40-4	580,00

#### MHV 50Ω, 5KV Coaxial, GROUNDED Shield 1 to 4 pins DOUBLE SIDED, CF and KF flanges

FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-MHVD50	310,00
16CF	1	242-MHVD50-C16	358,00
40CF	2	242-MHVD50-C40-2	658,00

#### MHV 50Ω, 5KV Coaxial, FLOATING Shield SINGLE and DOUBLE SIDED, CF flanges

FLANGE	PINS	PART NUMBER	EURO
WELD	1 SINGLE	242-MHVF50	320,00
16CF	1 SINGLE	242-MHVF50-C16	368,00
WELD	1 DOUBLE	242-MHVDF50	360,00
16CF	1 DOUBLE	242-MHVDF50-C16	398,00
40CF	1 DOUBLE	242-MHVDF50-C40	406,00

#### MHV 50Ω, 5KV Coaxial CABLES for DOUBLE SIDED types In-Vacuum Socket with Coaxial Kapton cable

CABLE MM	SOCKETS	PART NUMBER	EURO
NONE	1	245-CON-MHV	76,00
500 mm	1	380-MHV-MX-500	101,00
1000 mm	1	380-MHV-MX-1000	127,00
500 mm	2	380-MHV-MM-500	162,00
1000 mm	2	380-MHV-MM-1000	181,00



**SMB Miniature 50Ω Coaxial Feedthroughs**

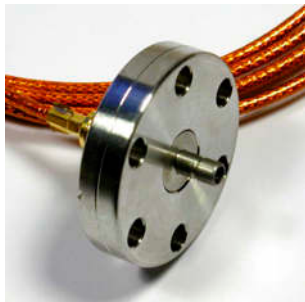
**SMB Vacuum Ready Cables**

Up to now the SMB has not been popular, owing to lack of in-vacuum connectors, no impedance matching and high prices. The new Allectra SMB overcomes all these problems.

- Small dimensions are combined with a frequency range up to 1 GHz
- In-vacuum connectors and cables at attractive prices
- New SMB is an alternative to the well established SMA types.

**General Specification 242-SMB**

Vacuum	UHV
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 220°C
Frequency	AC to 1 GHz
Current	1 A max
Test-Voltage	500 V DC (Working: 250V RMS)
Test-Resistivity	>1GΩ (pins to ground)
Impedance	50Ω
Cable	311-KAP50 (Standard)/ 311-KAP50S
Pin-ø	0.5 mm (Single Sided)
Crimp pin	use 360-CRF-05 (Single Sided)



Coaxial 50Ω SMB Feedthrough on 16CF with vacuum side connector and 50Ω cable



242-SMBD-C16

**Specification SMB Cables**

Type	Female to open end
Vacuum	UHV
Length	500 mm, 1000 mm or custom
Uses Wire	Co-axial Kapton 311-KAP50
Temp.	-40°C to 220°C



**SMB Miniature Coaxial Feedthroughs 500V  
1 to 4 pins SINGLE SIDED, CF flanges**

REDUCED

FLANGE	PINS	PART NUMBER	EURO
16CF	1	242-SMB-C16	199,00
40CF	1	242-SMB-C40	204,00
40CF	2	242-SMB-C40-2	398,00
40CF	3	242-SMB-C40-3	602,00
40CF	4	242-SMB-C40-4	791,00

**SMB Miniature Coaxial Feedthroughs 500V  
1 to 4 pins SINGLE SIDED, KF flanges**

REDUCED

FLANGE	PINS	PART NUMBER	EURO
16KF	1	242-SMB-K16	195,00
40KF	1	242-SMB-K40	199,00
40KF	2	242-SMB-K40-2	393,00
40KF	3	242-SMB-K40-3	598,00
40KF	4	242-SMB-K40-4	787,00

**SMB Miniature Coaxial Feedthroughs 500V  
1 to 4 pins DOUBLE SIDED, CF flanges**

FLANGE	PINS	PART NUMBER	EURO
16CF	1	242-SMBD-C16	245,00
40CF	1	242-SMBD-C40	250,00
40CF	2	242-SMBD-C40-2	475,00
40CF	3	242-SMBD-C40-3	795,00
40CF	4	242-SMBD-C40-4	950,00

**SMB Miniature Coaxial Feedthroughs 500V  
1 to 4 pins DOUBLE SIDED, KF flanges**

FLANGE	PINS	PART NUMBER	EURO
16KF	1	242-SMBD-K16	240,00
40KF	1	242-SMBD-K40	245,00
40KF	2	242-SMBD-K40-2	470,00
40KF	3	242-SMBD-K40-3	720,00
40KF	4	242-SMBD-K40-4	945,00

**SMB In-Vacuum 50 Ohm Cables  
SMB to open end**

LENGTH	SOCKETS	PART NUMBER	EURO
500 mm	1	380-SMB-FX-500	95,00
1000 mm	1	380-SMB-FX-1000	118,00

- 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

## Safe High Voltage (SHV) 5 KV Feedthroughs

### Standard & 50□ types (see page 33)

SAFE HIGH VOLTAGE (SHV) are Coaxial Feedthroughs designed to provide a secure high voltage connection on the air side. On the vacuum side they come in two versions: Recessed Ceramic and Exposed Ceramic.

- SHV F/T's include air side connector
- Single and Double Sided versions are available



### General Specifications SHV Standard

Type	241-SHV
Vacuum	UHV
Pin-ø	2.4 mm
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 300°C
Current	5A max
Voltage	5000 V DC
Test-Resistivity	>1 G□ (pins to ground)
Impedance	not constant
Cable	RG59B/ U
Weld-ø	12.6 mm (18.85mm SHVD)
Air side connectors are included	

### SHV 5KV RECESSED type Coaxial SINGLE SIDED versions - GROUNDED SHIELD **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	241-SHV	60,00
16CF	1	241-SHV-C16	111,00
40CF	1	241-SHV-C40	130,00
40CF	2	241-SHV-C40-2	200,00
40CF	3	241-SHV-C40-3	290,00
40CF	4	241-SHV-C40-4	365,00

Versions on KF Flanges are also available

### SHV 5KV EXPOSED type Coaxial SINGLE SIDED versions - GROUNDED SHIELD **REDUCED**

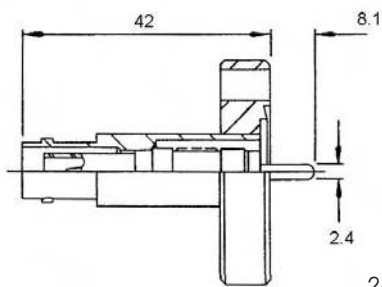
FLANGE	PINS	PART NUMBER	EURO
WELD	1	241-SHVE	75,00
16CF	1	241-SHVE-C16	125,00
40CF	1	241-SHVE-C40	145,00
40CF	2	241-SHVE-C40-2	230,00
40CF	3	241-SHVE-C40-3	335,00
40CF	4	241-SHVE-C40-4	430,00

Versions on KF Flanges are also available

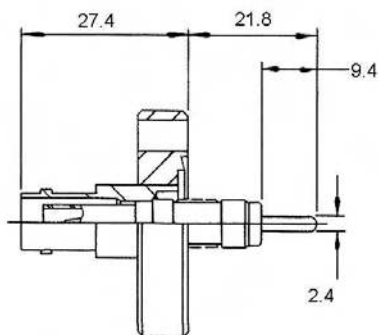
### SHV 5KV Coaxial DOUBLE SIDED - GROUNDED SHIELD **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	241-SHVD	220,00
16CF	1	241-SHVD-C16	275,00
40CF	1	241-SHVD-C40	285,00
40CF	2	241-SHVD-C40-2	520,00
40KF	1	241-SHVD-K40	275,00
40KF	2	241-SHVD-K40-2	440,00

Versions on KF Flanges are also available



241-SHV-C16



241-SHVE-C16

- 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

SHV50 50 Ohm 6KV Feedthroughs

SHV Vacuum Ready Cables

A special version of the versatile SHV type with 50  $\square$  impedance and increased voltage rating

- Single and Double Sided versions available
- Grounded Shield and Floating Shield versions



General Specifications SHV50  $\square$

Type	242-SHV50
Vacuum	UHV
Pin- $\phi$	1.65mm
Leak rate	<5x10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 300°C
Current	5A max
Voltage	6000V DC
Test-Resistivity	>1G $\square$ (pins to ground)
Impedance	50 $\square$
Frequency range	AC to 100 MHz
Connector (air)	use 241-CON-SHV-RG58
Connector (vac)	use 360-PIC-1.8
Weld- $\phi$	9.65 mm / double sided: 17.5 mm
Air side connectors are not included	

Custom flanges can be built with multiple SHV feedthroughs or mixtures of SHV and other types such as Sub-D



40CF Flange with Grounded and Floating Shield SHV

Female - Male?

Coaxial connectors are defined by the inner pin, if they are called male or female. All SHV types use for the feedthrough a Pin, so they are male. The connectors are female.

SHV 50 Ohm, 6KV Coaxial SINGLE SIDED versions - GROUNDED SHIELD

FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-SHV50	198,00
16CF	1	242-SHV50-C16	254,00
40CF	1	242-SHV50-C40	258,00
40CF	2	242-SHV50-C40-2	505,00
40CF	3	242-SHV50-C40-3	750,00
40CF	4	242-SHV50-C40-4	997,00

Versions on KF Flanges are also available

SHV 50 Ohm, 6KV Coaxial DOUBLE SIDED versions - GROUNDED SHIELD

FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-SHVD50	283,00
40CF	1	242-SHVD50-C40	364,00
40CF	2	242-SHVD50-C40-2	694,00
40CF	3*	242-SHVD50-C40-3	985,00

\*) Min tube ID of 38mm required

Versions on KF Flanges are also available

SHV 50 Ohm, 6KV Coaxial DOUBLE SIDED versions - FLOATING SHIELD

FLANGE	PINS	PART NUMBER	EURO
WELD	1	242-SHVDF50	324,00
40CF	1	242-SHVDF50-C40	405,00
40CF	2	242-SHVDF50-C40-2	789,00
40CF	3*	242-SHVDF50-C40-3	1098,00

\*) Min tube ID of 38mm required

Versions on KF Flanges are also available

SHV 50  $\square$  Coaxial In-vacuum Cables SHV5 to open end

LENGTH	SOCKETS	PART NUMBER	EURO
500 mm	1	380-SHV-FX-500	136,00
1000mm	1	380-SHV-FX-1000	159,00

SHV 50  $\square$  Air side connector

CONNECTOR	FOR CABLE	PART NUMBER	EURO
SHV 50 $\square$	RG58	241-CON-SHV-RG58	34,00

- 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

## SHV10 and 20 Coaxial Feedthroughs

SHV10 are SAFE HIGH VOLTAGE types rated for 10KV.  
 SHV20 is rated for up to 20KV.  
 Air side connectors are included for both types.

Ready made air side cables are available on request.



### General Specifications SHV10

Materials	SS, Nickel, Ceramic
Vacuum	UHV
Pin-ø	1.3 mm
Leak rate	<5x10 <sup>-10</sup> mbar l/s
Temp.	-100°C to 300°C
Current	5A max
Voltage	10KV DC
Impedance	not constant
Weld-ø	12.6 mm
Air side connector INCLUDED (for RG58 cable)	



Weld version - 10 KV 250-SHV10  
 with air side connector

### General Specifications SHV20

Materials	SS, Nickel, Ceramic
Vacuum	UHV
Pin-ø	2.4 mm
Leak rate	<5x10 <sup>-10</sup> mbar l/s
Temp.	-100°C to 300°C
Current	15A max
Voltage	20KV DC
Impedance	not constant
Weld-ø	15.8 mm
Air side connector INCLUDED (for RG213 cable)	



Weld version - 20 KV  
 250-SHV20

Both Feedthroughs are available to order without Air Side Connectors. Please call Sales Office

### SHV 10KV RECESSED type Coaxial SINGLE SIDED versions - GROUNDED SHIELD

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	250-SHV10	140,00
16CF	1	250-SHV10-C16	180,00
40CF	1	250-SHV10-C40	190,00
40CF	2	250-SHV10-C40-2	345,00
40CF	3	250-SHV10-C40-3	500,00
40CF	4	250-SHV10-C40-4	650,00

### SHV 10KV EXPOSED type Coaxial SINGLE SIDED versions - GROUNDED SHIELD

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	250-SHVE10	155,00
16CF	1	250-SHVE10-C16	195,00
40CF	1	250-SHVE10-C40	205,00
40CF	2	250-SHVE10-C40-2	360,00
40CF	3	250-SHVE10-C40-3	520,00
40CF	4	250-SHVE10-C40-4	680,00

### SHV 20KV RECESSED type Coaxial SINGLE ENDED versions - GROUNDED SHIELD

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	250-SHV20	195,00
16CF	1	250-SHV20-C16	250,00
40CF	1	250-SHV20-C40	260,00
40CF	2	250-SHV20-C40-2	505,00

### SHV 20KV EXPOSED type Coaxial SINGLE ENDED versions - GROUNDED SHIELD

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	250-SHVE20	195,00
16CF	1	250-SHVE20-C16	250,00
40CF	1	250-SHVE20-C40	260,00
40CF	2	250-SHVE20-C40-2	505,00

### SMA 2.92 mm K Type Microwave Feedthrough 40GHz

For Microwave applications up to 40GHz, Allectra offers a Vacuum Feedthrough type 2.92mm (also called K-Type). This special version of an SMA connector uses no PTFE dielectric.

Frequencies up to 40 GHz with well defined VSWR and insertion loss give high performance for RF applications. Every Feedthrough is delivered with a test certificate.

The seal to the Flange is made with a Viton O-ring.



#### Specification 242-SMAD40G

Vacuum	down to 10 <sup>-9</sup> mbar (O-ring sealed)
Leak rate	< 8x 10 <sup>-10</sup> mbar l /s He
Materials	SS, CuBe, Glass, Viton
Frequency	DC to 40GHz
VSWR	1.25:1
Insertion loss	0.25dB max
Impedance	50 Ω
Voltage	1KV RMS
Temp.	-65°C to 125°C
Connectors	2.92 mm Female (K-Type)

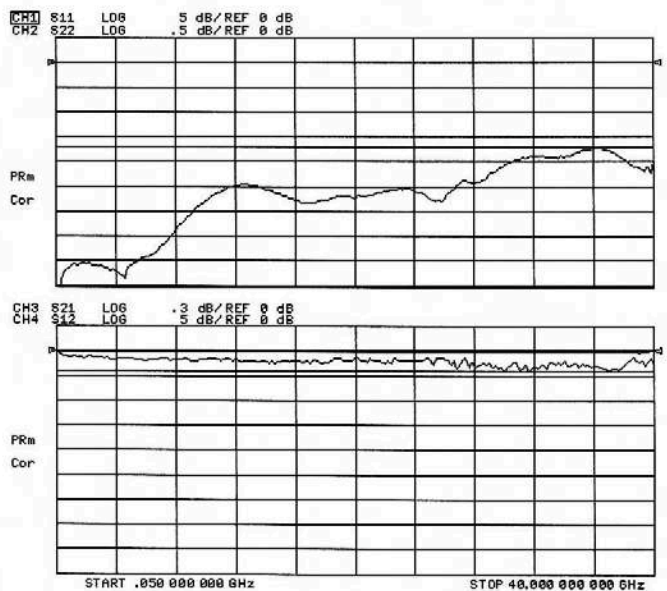
#### 2.92 mm K Type Microwave Feedthroughs 40GHz DOUBLE SIDED

FLANGE	PINS	PART NUMBER	EURO
16KF	1	242-SMAD40G-K16	POR
40KF	1	242-SMAD40G-K40	POR
16CF	1	242-SMAD40G-C16	POR
40CF	1	242-SMAD40G-C40	POR
40CF	2	242-SMAD40G-C40-2	POR
40CF	3	242-SMAD40G-C40-3	POR
40CF	4	242-SMAD40G-C40-4	POR



The Vacuum side of the 40 GHz Feedthrough, mounted on a 16CF flange. Please note that normal SMA connectors will fit, but might damage the Feedthrough. Only the nut must be turned for fixing the connector, never the connector itself.

An all metal sealed version for frequencies up to 45GHz is available now as well. Please ask for details!



A typical test spectra of a 40GHz 242-SMAD40G Feedthrough. All Feedthroughs are separately tested and the test certificate is supplied with the Feedthrough. Test frequency is 50MHz to 40GHz.

- 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

## 50Ω Type N and 7/16 Feedthroughs

### Ready made In-Vacuum Cables

- Includes Screw-on Air Side Connector
- High Frequency signals to 200MHz
- Grounded & Floating Shield types
- Single & Double Sided

Additionally high power 7/16 RF Feedthroughs can be offered as High Vacuum versions on KF and ISO flanges.



#### General Specifications N-Type

Type	Grounded & Floating Shield
Impedance	50Ω
Pin-ø	2.4 mm/ Standard Type N
Voltage	3KV DC
Current	5A
Temp.	-200°C to 300°C
Leak rate	<5x10 <sup>-10</sup> mbar l/s
Air Side Connectors are included (for RG58 cable)	
Vac. Connector	360-CRIMP-1.3M

#### Type N Feedthrough SINGLE SIDED - GROUNDED shield

FLANGE	PINS	PART NUMBER	EURO
WELD ø16mm	1	242-N50	160,00
16CF	1	242-N50-C16	225,00
40CF	1	242-N50-C40	230,00
40CF	2	242-N50-C40-2	425,00

#### Type N Feedthrough DOUBLE SIDED versions - GROUNDED shield

FLANGE	PINS	PART NUMBER	EURO
WELD ø24mm	1	242-ND50	220,00
40CF	1	242-ND50-C40	290,00
63CF	2	242-ND50-C63-2	580,00
63CF	3	242-ND50-C63-3	841,00

#### Type N Feedthrough DOUBLE SIDED versions - FLOATING shield

FLANGE	PINS	PART NUMBER	EURO
WELD ø24mm	1	242-NDF50	308,00
40CF	1	242-NDF50-C40	378,00
63CF	2	242-NDF50-C63-2	756,00
63CF	3	242-NDF50-C63-3	1130,00

#### Type N Coaxial Connector and In-vacuum Cables Type N to open end

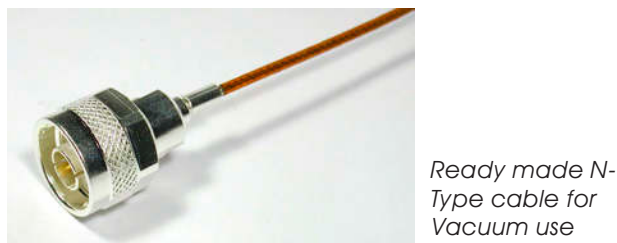
LENGTH	SOCKETS	PART NUMBER	EURO
NONE	1	245-CON-N	66,00
500 mm	1	380-N50-MX-500	135,00
1000 mm	1	380-N50-MX-1000	160,00

#### Type 7/16 Coaxial Feedthrough Double Sided - High Vacuum

**NEW**

ITEM	PART NUMBER	EURO
7/16 Feedthrough 50KF	242-7_16-K50	355,00
Vac. side connector RG393	245-CON-7_16-RG393	56,00
Air side connector RG213	241-CON-7_16-RG213	39,00

RG-393/U cable (PFTE) available on request



7/16 High power double sided feedthrough on KF50 flange



#### General Specifications 7/16

Type	Grounded Shield double sided
Impedance	50Ω, max. 7.5 GHz
Voltage	4KV eff max / <2.7KV @ 50Hz
Max. Power	1.8KW @ 1 GHz
Temp.	-20°C to 150°C
Leak rate	<1x10 <sup>-8</sup> mbar l/s
Flange	KF50 (Viton sealed f/t)
Connectors are not included.	

- 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

**Microdot Crystal Sensor Feedthroughs**

**Vacuum Ready Cables for use with Film Thickness Monitors**

Between Series Feedthroughs are offered with Microdot on the vacuum Side and BNC on the Air Side.

The Feedthroughs include optionally 2 or 3 water cooling pipes.

Cables are also offered with combinations of Microdot to Microdot, BNC or SMA Connectors



**Specification Between Series - Microdot/ BNC**

Compact Coaxial Threaded Feedthrough

Impedance	Non constant
Leak rate	<5x10 <sup>-10</sup> mbar l/s
Temp.	-100°C to 250°C
Voltage	500V DC
Materials	Molybdenum, Stainless Steel
Water tube	4.8mm (3/16") OD

**Microdot crystal sensor Feedthrough Between series Microdot to BNC**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	243-MDOT-BNC	215,00
16CF	1	243-MDOT-BNC-C16	285,00
40CF	1	243-MDOT-BNC-C40	295,00
16KF	1	243-MDOT-BNC-K16	285,00

Air side connectors are not included



*Double Sensor Feedthrough on 63CF flange. It includes one tube for pneumatic shutter.*

**Microdot crystal sensor Feedthrough on 40CF Microdot to BNC with Water Lines**

COAX	WATER	PART NUMBER	EURO
1	2	710-BNC1-W2-C40	476,00
1	3	710-BNC1-W3-C40	526,00
2	2	710-BNC2-W2-C40	784,00
2	3	710-BNC2-W3-C40	826,00

Versions on KF flanges available on request

**Microdot crystal sensor Feedthrough In-vacuum Cables**

LENGTH	SOCKETS	PART NUMBER	EURO
250 mm	2	710-IVC-250	85,00
750 mm	2	710-IVC-750	93,00
910 mm	2	710-IVC-910	119,00



710-IVC-750

**Microdot In-Vacuum Cables Microdot to Open End or SMA**

LENGTH	SOCKETS	PART NUMBER	EURO
NONE	1xMIC	245-CON-MIC	101,00
500 mm	1xMIC	380-MIC-MX-500	157,00
500 mm	2xMIC	380-MIC-MM-500	277,00
500 mm	1x MIC+1xSMA	380-MIC-SMA-500	218,00
500 mm	1x MIC+1xBNC	380-MIC-BNC-500	218,00
+500 mm		380-SMA-EXT05	23,00

Extention for 500 mm and more

Cable used: 311-KAP50, see page 64 for details

- 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

## Vacuum Side Plugs & Sockets for Coaxial Feedthroughs

### Air Side Connectors

This page summarizes all the different Vacuum Side connectors for coaxial feedthroughs.

For SMA Feedthroughs, a wide variation of Vacuum Connectors are offered as well as Air Side types.



Non-Magnetic SMA Connector  
 245-CON-SMA-NM

#### Specifications: Vacuum Plugs & Sockets

Vacuum	UHV or High Vacuum
Temp.	-40°C to 180°C (min)
Use Wire or Cable	
SMA	311-KAP50 / 311-KAP50S
BNC	311-KAP50 / 311-KAP50S
MHV	311-KAP50
SHV	311-KAP50
N	311-KAP50
MICRODOT	311-KAP50
SMB	311-KAP50 / 311-KAP50S

#### SMA Connectors 50Ω except Ceramic (CER) types Non-magnetic (NM), Straight (STR) and 90°

TYPE	FOR CABLE	PART NUMBER	EURO
STR	KAP50	245-CON-SMA-V2	45,00
STR	KAP50	245-CON-SMA-1	41,00
STR CER*	KAP50	245-CON-SMA-CER	72,00
STR SMALL	KAP50S	245-CON-SMA-S	48,00
90°	KAP50	245-CON-SMA-90	45,00
STR NM	KAP50	245-CON-SMA-NM	60,00
90° NM	KAP50	245-CON-SMA-90-NM	60,00
Female	KAP50	245-CON-SMA-F	53,00
Female CER*	KAP50	245-CON-SMA-CER-F	95,00

\* not 50Ω

#### Vacuum Side Sockets Fit to double sided Feedthroughs

F/T	FOR CABLE	PART NUMBER	EURO
BNC(50)	KAP50	245-CON-BNC	44,00
BNC(50)	KAP50S	245-CON-BNC-S	56,00
MHV(50)	KAP50	245-CON-MHV	76,00
SHV	KAP50	245-CON-SHV	80,00
N	KAP50	245-CON-N	66,00
MICRODOT	KAP50	245-CON-MIC	101,00
SMB	KAP50	245-CON-SMB	45,00
SMB	KAP50S	245-CON-SMB-S	48,00
7/16	RG58	245-CON-7_16-RG58	39,00
7/16	RG393/213/214	245-CON-7_16-RG393	56,00

MHV, SHV, N, 7/16 have silver plated housings

#### Air Side Connectors Fit to Feedthroughs

F/T	FOR CABLE	PART NUMBER	EURO
SMA	RG174	241-CON-SMA-RG174	10,00
BNC	RG58	241-CON-BNC-RG58	7,00
SMB	RG174	241-CON-SMB-RG174	10,00
MHV	RG59	241-CON-MHV-RG58	14,00
SHV	RG59	241-CON-SHV-RG59	29,00
SHV 50 Ω	RG58	241-CON-SHV-RG58	34,00
SHV-10	RG58C	241-CON-SHV10	69,00
SHV-20	RG213	241-CON-SHV20	145,00
N50/N	RG58	241-CON-N-RG58	9,00
N50/N	RG213	241-CON-N-RG213	9,00
7/16	RG213	241-CON-7_16-RG213	32,00



Various Vacuum Side connectors:

Top row: 245-CON-SMA-V2 (left)  
 245-CON-SMA-S (middle)  
 245-CON-SMA-90 (right)



245-CON-SMA-F (female)



245-CON-MHV  
 (female connector)



245-CON-SHV



245-CON-N



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  
Hardware  
CF  
11  
Hardware  
KF  
12  
Hardware  
ISO-K  
13  
Adaptors  
Specials  
14  
HV / UHV  
Chambers  
15  
Atlas  
Bi-Metal  
16



**Power Feedthroughs, Low and High Voltage, Multi-way and Ceramic Breaks**

**4.1 POWER: LOW VOLTAGE TO 1KV**

-> Page 4.2

Molybdenum, Stainless Steel and Copper Conductors



**4.2 POWER – 5KV up to 20 A**

-> Page 4.3

Power Feedthroughs rated at up to 5KV and up to 20 A  
 Stainless Steel, Nickel and Copper Conductor



**4.3 HIGH CURRENT UP TO 1000A**

-> Page 4.5

High Current Feedthroughs rated at up to 1000Amps  
 Copper, Copper Tube Conductor and Screw-on contacts



**4.4 MULTI-WAY WITH MS SOCKETS**

-> Page 4.6

Multi-way Feedthroughs with Air Side MS Circular Sockets  
 Alumel, Molybdenum and Copper Conductor



**4.5 12KV WITH MS SOCKETS**

-> Page 4.7

Multi-way 12KV Feedthrough with MS Circular Air Side Sockets



**4.6 POWER GLOVE 5KV TO 20KV**

-> Page 4.8

Power Glove Feedthroughs 5KV to 20KV  
 Copper, Nickel and Stainless Steel Conductor



**4.7 HIGH VOLTAGE**

-> Page 4.10

Individual High Voltage Feedthroughs with fluted or straight ceramics



**4.8 POWER: BASEPLATE TYPES**

-> Page 4.11

1" (25.4mm) Baseplate Feedthroughs- various types

**4.9 CERAMIC BREAKS**

-> Page 4.12

Cryogenic and Vacuum Breaks up 35 KV  
 Tube Feedthroughs  
 Ceramic Stand-offs  
 Vacuum Breaks up to 40KV

**4.10 POWER: CONNECTORS**

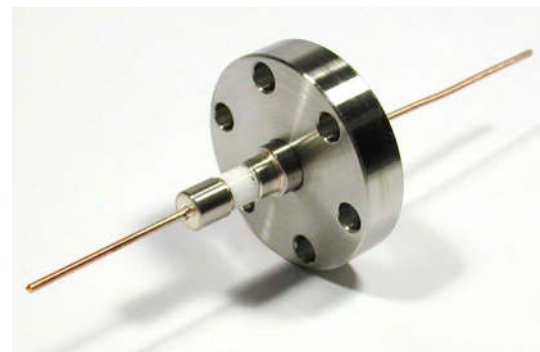
-> Page 4.14

Crimps, Push-ons, Screw-ons and Clamps

- 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

### Power Feedthroughs – low voltage types 500V & 1KV

- Choice of Conductor Materials: Molybdenum, Stainless Steel, Nickel or Copper
  - 500 Volt types are very small and ideal when space is limited
  - 1KV types are for general purpose instrumentation use
- All conductor materials and all flange types are available even if not shown in the product tables



#### General Specification 500V types

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	500V, 8A max per Pin
Pin- $\varnothing$	0.8 mm
Pin material	Molybdenum (Cu, Ni, SS optional)
Weld $\varnothing$	1 Pin type 3.9 mm 2 & 4 Pins types 12.6 mm 8 Pin type 19 mm
Crimps	use 360-CRF-07-10

#### 500V 8A Molybdenum Conductor Conductor 0.8 mm

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-08MO500	30,00
WELD	2	264-08MO500-2	60,00
WELD	4	264-08MO500-4	70,00
WELD	8	264-08MO500-8	100,00
16CF	2	264-08MO500-2-C16	110,00
16CF	4	264-08MO500-4-C16	120,00
16CF	8	264-08MO500-8-C16	145,00

Note: also available with Copper (12A), Nickel (4A), Stainless Steel (1A) and Constantan (2A) conductors

#### General Specification 1KV types

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	1KV, max current see below
Pin- $\varnothing$	1.3 mm
Pin material	SS, Cu or Kovar
Current SS	1 A max per pin
Current Cu	20 A max per pin
Current Kovar	7 A max per pin
Weld $\varnothing$	1 Pin type 6.3 mm 2 to 8 Pin types 19 mm
Crimps	use 360-CRIMP-1.3

#### 1KV 1A Stainless Steel Conductor Conductor 1.3 mm (8 pin vers. Kovar rated 7A)

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13SS1K	30,00
WELD	2	264-13SS1K-2	50,00
WELD	4	264-13SS1K-4	75,00
WELD	8*	264-13KO1K-8	100,00
16CF	2	264-13SS1K-2-C16	90,00
16CF	4	264-13SS1K-4-C16	105,00
16CF	8*	264-13KO1K-8-C16	140,00
16KF	2	264-13SS1K-2-K16	90,00
16KF	4	264-13SS1K-4-K16	105,00
16KF	8*	264-13KO1K-8-K16	140,00

Note: feedthroughs marked \* are also available with stainless steel tubes

#### 1KV 20A Copper Conductor Conductor 1.3 mm

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13CU1K	30,00
WELD	2	264-13CU1K-2	50,00
WELD	4	264-13CU1K-4	75,00
WELD	8	264-13CU1K-8	100,00
16CF	2	264-13CU1K-2-C16	90,00
16CF	4	264-13CU1K-4-C16	105,00
16CF	8	264-13CU1K-8-C16	140,00
16KF	2	264-13CU1K-2-K16	90,00
16KF	4	264-13CU1K-4-K16	105,00
16KF	8	264-13CU1K-8-K16	135,00

Note: also available with Nickel (7A) conductors



8 pin 500V version on 16CF (left) and 1KV version (right) with copper pin

**CRYOGENIC OPTION:** Versions with Constantan Pins for use at liquid Helium temperature are available. The current rating is 2A. Please ask for details.

- 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

**Power Feedthroughs rated at up to 5KV & up to 20 A**

- Stainless Steel, Nickel and Copper Conductors with a diameter of 1.3mm.
- Single Pin weldables
- up to 4 Pins on 16CF /16 KF Flanges

Custom arrangements on choice of flanges upon request



**General Specification 5KV types**

Vacuum	UHV (leak rate <math> < 5 \times 10^{-10} \text{mbar-l/s}</math>)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	5KV max current see below
Pin-ø	1.3 mm SS, Ni or Cu
Current Cu	20 A max per pin
Current Ni	7 A max per pin
Current SS	1 A max per pin
Weld-ø	1 pin type 6.3 mm
Weld-ø	2 or 4 pin types 19 mm
Crimps	use 360-CRIMP-1.3



261-13CU5K

For versions on 40CF and 40KF Flanges see next page!

**5KV 20A Copper Conductor Conductor 1.3 mm**

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13CU5K	30,00
WELD	2	264-13CU5K-2	65,00
WELD	4	264-13CU5K-4	75,00
16CF	2	264-13CU5K-2-C16	105,00
16CF	4	264-13CU5K-4-C16	115,00
16KF	2	264-13CU5K-2-K16	105,00
16KF	4	264-13CU5K-4-K16	115,00

**5KV 7A Nickel Conductor Conductor 1.3 mm**

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13NI5K	30,00
WELD	2	264-13NI5K-2	65,00
WELD	4	264-13NI5K-4	75,00
16CF	2	264-13NI5K-2-C16	105,00
16CF	4	264-13NI5K-4-C16	115,00
16KF	2	264-13NI5K-2-K16	105,00
16KF	4	264-13NI5K-4-K16	115,00

**5KV 1A Stainless Steel Conductor Conductor 1.3 mm**

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13SS5K	30,00
WELD	2	264-13SS5K-2	65,00
WELD	4	264-13SS5K-4	75,00
16CF	2	264-13SS5K-2-C16	105,00
16CF	4	264-13SS5K-4-C16	115,00
16KF	2	264-13SS5K-2-K16	105,00
16KF	4	264-13SS5K-4-K16	115,00

- 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

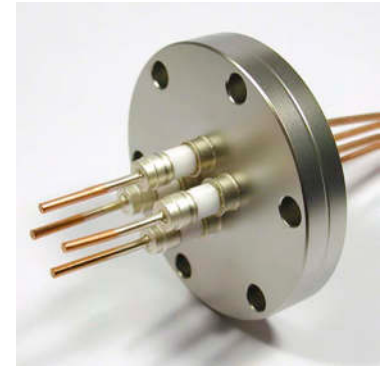
# 4.4 POWER: 5KV/ 10KV UP TO 30 A

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## Power feedthroughs – 5KV and 10KV up to 30 A

- Stainless Steel, Nickel & Copper Conductors
- Up to 12 Pins on 40CF or 40KF flange
- Custom arrangements of Pins and Flange types upon request



264-24CU5K-4-C40

### General Specification 5KV 30A types

Vacuum	UHV (leak rate <math><5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Pin-ø	2.4 mm
Voltage	5KV
Current	30 A per pin CU 15 A per pin Ni
Weld-ø	11 mm
Connectors	use 360-CRIMP-2.4

### 5KV 30A Copper Conductor Conductor 2.4 mm

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-24CU5K	30,00
16CF	1	261-24CU5K-C16	75,00
16CF	2	264-24CU5K-2-C16	135,00
40CF	4	264-24CU5K-4-C40	185,00
40CF	8	264-24CU5K-8-C40	300,00
40CF	12	264-24CU5K-12-C40	365,00
16KF	1	261-24CU5K-K16	75,00
16KF	2	264-24CU5K-2-K16	135,00
40KF	4	264-24CU5K-4-K40	185,00
40KF	8	264-24CU5K-8-K40	300,00
40KF	12	264-24CU5K-12-K40	365,00

Note: also available with Nickel (15A) conductors

### General Specification 10KV types

Vacuum	UHV (leak rate <math><5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Pin-ø	2.4 mm
Voltage	10KV
Current	30 A per pin CU 15 A per pin Ni
Weld-ø	11 mm
Connectors	use 360-CRIMP-2.4

### 10KV 30A Copper Conductor Conductor 2.4 mm

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-24CU10K	35,00
16CF	1	261-24CU10K-C16	110,00
16CF	2	264-24CU10K-2-C16	165,00
40CF	4	264-24CU10K-4-C40	225,00
16KF	1	261-24CU10K-K16	110,00
16KF	2	264-24CU10K-2-K16	165,00
40KF	4	264-24CU10K-4-K40	225,00

Note: also available with Nickel (15A) conductors

### 5KV 100A Copper Conductor Conductor 4 mm

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-40CU5K	51,00
16CF	1	261-40CU5K-C16	105,00
40CF	1	261-40CU5K-C40	109,00
40CF	2	261-40CU5K-2-C40	189,00
25KF	1	261-261-40CU5K-K25	115,00
40KF	2	264-261-40CU5K-2-K40	186,00

Note: also available with Nickel (30A) conductors



261-24CU10K

*Crimps see page 4.14.  
 Versions with air side Power Glove  
 Cables on page 4.8!*

- 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

**High Current Feedthroughs to 1000A**

High Current Feedthroughs are suitable for heaters, furnaces and Electron Beam Evaporation Sources.

A range of types is offered as weld adaptors or on KF or CF flanges.

Special arrangements on standard or custom flanges are available upon request.

For very high current a 1000 Ampere water cooled Feedthrough is offered.



**Specification 5KV 150A types**

Vacuum	UHV (leak rate <math><5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Pin-ø	6.35 mm
Voltage	5KV
Current	150 A per pin CU 75 A per pin Ni 7 A per Pin SS
Weld-ø	15.8 mm
Connectors	use 360-PPO-6.6 / 360-PPO-6.4

**5KV 150A Copper Conductor  
 Conductor 6.35 mm ø**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
16CF	1	261-63CU5K-C16	97,00
40CF	2	264-63CU5K-2-C40	170,00
40CF	3	264-63CU5K-3-C40	225,00
40CF	4	264-63CU5K-4-C40	275,00
16KF	1	261-63CU5K-K16	80,00
40KF	2	264-63CU5K-2-K40	170,00
40KF	3	264-63CU5K-3-K40	225,00
40KF	4	264-63CU5K-4-K40	275,00

Also available with Nickel (75A) and stainless steel (7A) conductors

**Specification 3KV 250A types**

Vacuum	UHV (leak rate <math><5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	3KV , 250 A
Pin-ø	9.65 mm Cu
Weld-ø	19mm
Clamps	360-CLAMP-9.6

**3KV 250A Copper Conductor  
 Conductor 9.65 mm ø**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-96CU3K	68,00
16CF	1	261-96CU3K-C16	100,00
16KF	1	261-96CU3K-K16	100,00
1" BOLT	1	261-96CU3K-BP	195,00

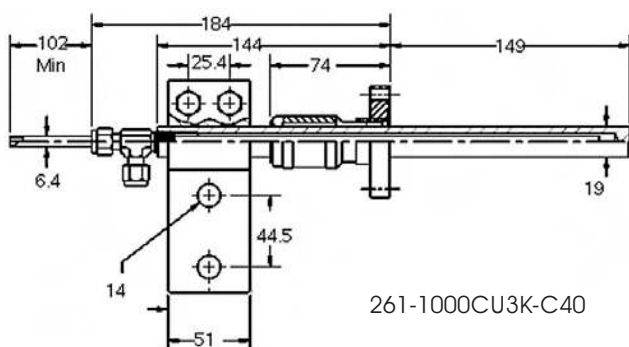
**Specification 3KV 600A types**

Vacuum	UHV (leak rate <math><5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	3KV , 600 A
Pin-ø	19mm Cu
Weld-ø	28.5mm
Clamps	360-CLAMP-19

**3KV 600A Copper Conductor  
 Conductor 19 mm ø**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-190CU3K	166,00
40CF	1	261-190CU3K-C40	200,00
40KF	1	261-190CU3K-K40	200,00



**3KV 1000A Copper Tube Conductor  
 Watercooled 1/4" (6.35 mm) Swagelock conn.**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
40CF	1	261-1000CU3K-C40	750,00

- 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

# 4.6 MULTI WAY F/T: MS-SOCKETS

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## Multi-way Feedthroughs with MS Circular Sockets

- A range of Multi-way Feedthroughs with 10/ 23 or 40 Amps per Pin
- MS Circular Screw-On Sockets included
- MS sockets comply with MIL-C-5015
- Double Sided option on request



### Specification MS 10 Amps 700 Volts

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Materials	SS, Ceramic
Air side Socket	MS Circular included
Temp.	-200°C to 450°C (without conn.)
Electrical	700V DC, 10 Amp max per Pin
Pin-ø	1.4 mm Alumel
Crimps	use 360-CRIMP-1.3/ 360-CRBC-1.4

### 700V 10A Multi-way 4 to 35 Alumel Cond. 1.4 mm includes MS Circular Air Side Socket

**REDUCED**

FLANGE	PINLENGTH	PINS	PART NUMBER	EURO
16CF	66.5	4	221-10AL700-4-C16	190,00
16CF	66.5	6	221-10AL700-6-C16	205,00
40CF	78	6	221-10AL700-6-C40	220,00
16CF	66.5	10	221-10AL700-10-C16	330,00
40CF	78	10	221-10AL700-10-C40	345,00
40CF	87	20	221-10AL700-20-C40	435,00
40CF	52	35	221-10AL700-35-C40	750,00
16KF	66.5	4	221-10AL700-4-K16	190,00
16KF	66.5	6	221-10AL700-6-K16	205,00
16KF	66.5	10	221-10AL700-10-K16	330,00
40KF	88	20	221-10AL700-20-K40	425,00
40KF	51	35	221-10AL700-35-K40	745,00

Note: all MS types are also available double sided  
 Note: available as weldables to order



Double sided 4-pin Version on 40CF, these versions are available on request

### Specification MS 23 Amps 700 Volts

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Materials	SS, Ceramic
Air side Socket	MS Circular included
Temp.	-200°C to 450°C (without conn.)
Electrical	700V DC, 23 Amps max per Pin
Pin-ø	2.4 mm Copper
Crimps	use 360-CRIMP-2.4

### 700V 23A Multi-way 2 to 8 Copper Cond. 2.4 mm includes MS Circular Air Side Socket

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
40CF	2	221-23CU700-2-C40	270,00
40CF	3	221-23CU700-3-C40	290,00
40CF	4	221-23CU700-4-C40	335,00
40CF	5	221-23CU700-5-C40	360,00
40CF	7	221-23CU700-7-C40	415,00
40CF	8	221-23CU700-8-C40	445,00

Note: also available with Nickel(15A) conductors



221-40MO700-4-C40

### Specification MS 40 Amps 700 Volts

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Materials	SS, Ceramic
Air side Socket	MS Circular included
Temp.	-200°C to 450°C (without conn.)
Electrical	700V DC, 40 Amp max per Pin
Pin-ø	3.6 mm Molybdenum
Push-ons	use 360-PPO-4

### 700V 40A Multi-way 2 & 4 Molybdenum Cond. 3.6mm includes MS Circular Air Side Socket

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
40CF	2	221-40MO700-2-C40	330,00
40CF	4	221-40MO700-4-C40	400,00
40KF	2	221-40MO700-2-K40	330,00
40KF	4	221-40MO700-4-K40	400,00

Note: available as weldables to order

Note: also available with Nickel (25A) conductors

**High voltage 12KV with MS circular sockets**

- A range of High Voltage Multi-way Feedthroughs with 7.5 Amps per Pin
- MS Circular Screw-On Sockets included for the Air Side
- MS sockets comply with MIL-C-5015

Vacuum Side Sockets are available for 40CF versions. Please ask Sales Office for details.



**General Specification 267-075HV**

Vacuum	UHV
Compatible	MIL-C-5015
Pin-ø	1.3 mm
Pin material	Mo
Socket	MS circular socket
Leak rate	<math>5 \times 10^{-10}</math> mbar-l/s
Temp.	-200°C to 450°C
Test-Voltage	12KV DC
Current	7.5 A max per pin
Crimps	360-CRBC-1.3

**12KV 7.5A Multi-way 2 to 7 conductors, 1.3 mm includes MS circular air side socket**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
16CF	2	267-075HV12K-2-C16	465,00
16CF	4	267-075HV12K-4-C16	505,00
16CF	7	267-075HV12K-7-C16	550,00
40CF	2	267-075HV12K-2-C40	465,00
40CF	4	267-075HV12K-4-C40	505,00
40CF	7	267-075HV12K-7-C40	550,00
16KF	2	267-075HV12K-2-K16	465,00
16KF	4	267-075HV12K-4-K16	505,00
16KF	7	267-075HV12K-7-K16	550,00
40KF	2	267-075HV12K-2-K40	465,00
40KF	4	267-075HV12K-4-K40	505,00
40KF	7	267-075HV12K-7-K40	550,00

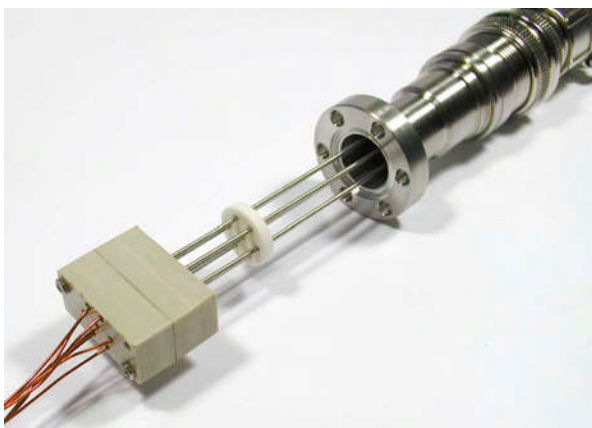
**Crimps Beryllium Copper For Conductor 1.3 mm**

SIZE	No PER PKT.	PART NUMBER	EURO
1.3 mm	10	360-CRBC-1.3	40,00

**Vacuum side Connector for 12KV F/T, 2 to 7 pins, FITS 40CF Feedthrough**

Pins	Qty.	PART NUMBER	EURO
2-4	1	267-CON12K-4	114,00
7	1	267-CON12K-7	126,00

Crimp pins are included



Vacuum side connector 267-CON12K-7. The connector will not fit through a 16CF flange, so it must be fitted from the vacuum side after installation. Alternatively a 40CF flange can be used.

- 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

### Power Glove Feedthroughs 5KV to 10KV



- A new design of High Voltage 5KV and 10 KV Feedthrough
- Air side cables and High Voltage Glove with 2.4 m length included
- 1, 2 or 4 Pins option on 40CF flange
- Supplied on CF, KF or custom flange designs

#### General Specification 265-025 (CU/ NI/ SS) 5K

Vacuum	UHV
Pin-ø	2.4 mm
Pin material	Cu, Ni or SS
Air cable	High Voltage Power Glove 2.4m
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C without cable
Test-Voltage	5KV DC
Test-Resistivity	>1GΩ (pins to ground)
Current	Cu: 25A max per pin Ni: 15A max per pin SS: 1A max per pin
Connectors	360-CRIMP-2.4 / 360-PPO-2.4
Weld-ø	11 mm

#### 5KV Power Glove Feedthroughs, Copper cond. 25A includes 2.4 m Air side cable **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-025CU5K	75,00
16CF	1	265-025CU5K-C16	130,00
40CF	2	265-025CU5K-2-C40	215,00
40CF	4	265-025CU5K-4-C40	365,00

#### 5KV Power Glove Feedthroughs, Nickel cond. 15A includes 2.4 m Air side cable **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-015NI5K	75,00
16CF	1	265-015NI5K-C16	130,00
40CF	2	265-015NI5K-2-C40	215,00
40CF	4	265-015NI5K-4-C40	365,00

#### 5KV Power Glove Feedthroughs, Stainless St. cond. 1A includes 2.4 m Air side cable **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-001SS5K	75,00
16CF	1	265-001SS5K-C16	130,00
40CF	2	265-001SS5K-2-C40	215,00
40CF	4	265-001SS5K-4-C40	365,00

#### General Specification 265-025 (CU/ NI/ SS) 10K

Vacuum	UHV
Pin-ø	2.4 mm
Pin material	Cu, Ni or SS
Air cable	High Voltage power Glove 2.4 m
Leak rate	<5x10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C without cable
Test-Voltage	10KV DC
Test-Resistivity	>1GΩ (pins to ground)
Current	Cu: 25A max per pin Ni: 15A max per pin SS: 1A max per pin
Connectors	360-CRIMP-2.4 / 360-PPO-2.4
Weld-ø	11 mm

#### 10KV Power Glove Feedthroughs, Nickel cond. 15A includes 2.4 m Air side **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-015NI10K	85,00
16CF	1	265-015NI10K-C16	145,00
40CF	2	265-015NI10K-2-C40	245,00
40CF	4	265-015NI10K-4-C40	425,00

#### 10KV Power Glove Feedthroughs, Copper cond. 25A includes 2.4 m Air side cable **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-025CU10K	85,00
16CF	1	265-025CU10K-C16	145,00
40CF	2	265-025CU10K-2-C40	245,00
40CF	4	265-025CU10K-4-C40	425,00

Note: also available with Stainless Steel (1A) conductors

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



**Power Glove Feedthroughs 20KV to 40KV**

Power Glove High Voltage Feedthroughs include an Air Side insulating cover and 2.4 m of High Voltage Cable  
 Power Glove Feedthroughs are available with Copper, Nickel or Stainless Steel conductors.  
 It is the users responsibility to ensure that electrical components are used in accordance with local regulations.



40KV Feedthrough with Cable

**Specification 20KV Power Glove**

Vacuum	UHV
Pin-ø	2.4 mm
Pin material	Cu, Ni or SS
Air cable	High Voltage power Glove 2.4m
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C without cable
Test-Voltage	20KV DC
Test-Resistivity	>1GΩ (pins to ground)
Current	Cu: 25A max per pin Ni: 15A max per pin SS: 1A max per pin
Crimps	360-CRIMP-2.4/ 360-PPO-2.4
Weld-ø	11 mm



265-025CU20K-4-C40



265-001SS20K-C40

**Specification 40KV with cable**

Vacuum	UHV
Materials	Straight Ceramic/SS
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Pin-ø	1.6 mm
Pin material	SS
Air cable	9 m cable included
Test-Voltage	40KV DC pin to ground
Current	7A
Crimps	360-CRBC-1.6
Weld-ø	28.5 mm

**20KV Power Glove Feedthroughs, Copper cond. 25A includes 2.4 m Air side cable** **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-025CU20K	90,00
16CF	1	265-025CU20K-C16	150,00
40CF	2	265-025CU20K-2-C40	255,00
40CF	4	265-025CU20K-4-C40	445,00

**Air side cable for Power Glove Feedthroughs**

LENGTH	VOLTAGE	PART NUMBER	EURO
2.4 m	5 KV	265-CAB-5K	60,00
2.4 m	20 KV	265-CAB-20K*	60,00

\* also useable for 10KV

**20KV Power Glove Feedthroughs, Nickel cond. 15A includes 2.4 m Air side cable** **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-015NI20K	90,00
16CF	1	265-015NI20K-C16	150,00
40CF	2	265-015NI20K-2-C40	255,00
40CF	4	265-015NI20K-4-C40	445,00

**20KV Power Glove Feedthroughs, Stainless St. cond, 1A includes 2.4 m Air side cable** **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-001SS20K	90,00
16CF	1	265-001SS20K-C16	150,00
40CF	2	265-001SS20K-2-C40	255,00
40CF	4	265-001SS20K-4-C40	445,00

**40KV Feedthroughs, Stainless St. conductor 7A Air side connector and 9 m cable incl.** **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-007SS40K	605,00
40CF	1	265-007SS40K-C40	565,00
40KF	1	265-007SS40K-K40	570,00

- 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

## High Voltage Feedthroughs – other types

High Voltage Feedthroughs are offered in ratings up to 60KV. They are not built for high currents as high voltage and high current are typically not used together.

Tube Feedthroughs (see Page 51) are suitable for liquid cooling applications and High Voltages where higher currents are necessary.



### Specification 20KV Fluted Ceramic

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS Ceramic
Temp.	-200°C to 450°C
Electrical	20KV, max current as below
Pin	6.35 mm Cu or Ni
Max. Current	Cu 150A Ni 75A
Connector	360-PIC-6.6 (for air and vacuum side)

### 20KV Feedthroughs Nickel and Copper conductor Conductor 6.35 mm Fluted Ceramic

**REDUCED**

FLANGE	AMPS	PART NUMBER	EURO
40CF	75	266-075NI20K-C40	250,00
40CF	150	266-150CU20-C40	250,00

Weldable versions and KF versions available on request

### Specification 30KV Fluted Ceramic

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS Ceramic
Temp.	-200°C to 450°C
Electrical	30KV, max current as below
Pin	2.4 mm Cu or Ni or SS
Max. Current	Cu 30A SS 3A
Connector	360-PPO-2.4
Air Side	Threaded connection 1/4-28

### 30KV Feedthroughs, Stainless Steel and Copper cond. Conductor 2.4 mm

**REDUCED**

FLANGE	COND.	PART NUMBER	EURO
WELD	SS	266-003SS30K	145,00
40CF	SS	266-003SS30K-C40	200,00
40CF	Cu	266-030CU30K-C40	200,00

### Specification 30KV Fluted Ceramic 2 Pin

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS Ceramic
Temp.	-200°C to 450°C
Electrical	30KV, 50A (max. 5KV pin to pin)
Pin	2 x copper, 2.4 mm
Connector	360-PPO-2.4
Air Side	Threaded connection 1/4-28

### 30KV 50A Feedthrough - 2 PIN Conductors 2.4 mm

**REDUCED**

FLANGE	COND.	PART NUMBER	EURO
40CF	CU	266-050CU30K-2-C40	425,00



### Specification 60KV Fluted Ceramic

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS Ceramic
Temp.	-200°C to 450°C
Electrical	60KV 3A per Pin
Pin	Vacuum 4mm
Push-on	360-PPO-4
Air Side	Threaded connection 1/4-28

### 60KV Feedthrough Stainless Steel conductor 3A Conductor 2.4 mm

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
63CF	1	266-003SS60K-C63	930,00

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

## Baseplate Feedthroughs

Baseplate Feedthroughs are designed to fit through a 1"(25.4mm) hole and seal by compressing an O-Ring between 2 nuts.

Applications for these Feedthroughs include High Vacuum Coaters. Many of our Feedthroughs can be supplied as Baseplate types. This page shows a selection of those which are available.

### General Specification OCTAL type

Vacuum	High Vacuum
Materials	SS, Ceramic, Viton O ring
Seal	1" (25.4mm) Bolt type
Plate thickness	32 mm max
Pins	8 Octal pattern
Electrical	1KV 5Amps per Pin
Connectors	Air and Vacuum Octal included

### 1KV 8 way Feedthrough Stainless Steel conductor includes Air and Vacuum Octal Connectors **REDUCED**

SIZE	PINS	PART NUMBER	EURO
1" BOLT	8	221-005OCT1KV-8-BP	358,00



264-13CU1K-2-BP

### Specification 1KV 20A Baseplate Feedthrough

Vacuum	High Vacuum
Materials	Stainless Steel, Viton O ring
Electrical	1 KV DC Max current as below
Seal	1" (25.4 mm) baseplate bolt
Plate thickness	32mm max
Pin material	1.3mm Cu (Ni or SS option)
Max. Current	Cu 20A Ni 7A SS 1A
Crimps	360-CRIMP-1.3
8 way Feedthrough has optionally SS tube or Ni conductors	

### 1KV 20A Baseplate Feedthrough Copper cond. 1.3mm Fits Baseplate with 1" (25.4mm) hole **REDUCED**

SIZE	PINS	PART NUMBER	EURO
1" BOLT	2	264-13CU1K-2-BP	170,00
1" BOLT	4	264-13CU1K-4-BP	225,00
1" BOLT	8	264-13CU1K-8-BP	280,00

Also available with Stainless Steel tube and Nickel (7A) conductors



261-198CU3K-BP

### Specification 250 A BP Feedthrough

Vacuum	High Vacuum
Seal	1" (25.4mm) baseplate bolt
Plate thickness	32mm max
Pin	Cu (3/8-16 thread both sides) ~9.6mm
Electrical	3KV, 250A

### 3KV 250A Baseplate Feedthrough Copper conductor includes air and vacuum side clamping nuts **REDUCED**

SIZE	PINS	PART NUMBER	EURO
1" BOLT	1	261-198CU3K-BP	195,00



261-1000WC-BP

### Specification 1000 A BP Feedthrough

Vacuum	High Vacuum
Seal	1" (25.4mm) baseplate bolt
Plate thickness	32mm max
Pin	Water Cooled Copper
Electrical	50V, 1000A

### 1000A Water Cooled Baseplate Feedthrough includes vacuum side clamping screw **REDUCED**

SIZE	PINS	PART NUMBER	EURO
1" BOLT	1	261-1000WC-BP	205,00

See page 52 for vacuum Side Crimps

- 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

## High Voltage Cryogenic and Vacuum Breaks

- Small Tube Size Breaks for Gas and Liquid lines
- Cryogenic versions for use with Liquid Nitrogen
- Large sizes for System Isolation

N.B. If using Ceramic Breaks to join two Vacuum Systems while maintaining electrical isolation, the use of a bellows in addition to the Break is recommended. Stand-offs (see Page 51) for mounting high voltage items are suitable for use in air or vacuum. (In air the Maximum Voltage rating should be reduced by a factor of 2.5)



### General Specification Ceramic Breaks

Vacuum	UHV
Ceramic	Al <sub>2</sub> O <sub>3</sub>
Leak rate	< 5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C
Temp gradient	25°/ min Max
Test-Voltage	see Product Tables

### 5KV DC Cryogenic breaks Tube sizes 3/32" (2.4 mm), 1/8" (3.2 mm)

**REDUCED**

TUBE OD	LENGTH	PART NUMBER	EURO
3/32"(2.4)	58.4	271-CB-2.4	48,00
1/8"(3.2)	58.4	271-CB-3.2	56,00

### 10KV DC Cryogenic breaks Tube sizes 1/4"(6.35 mm) and 3/8"(9.5 mm)

**REDUCED**

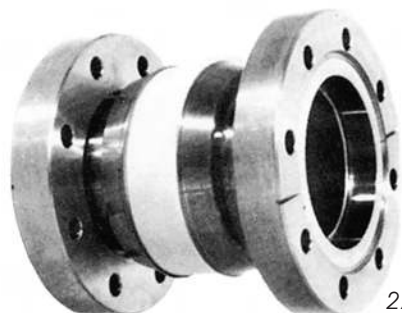
TUBE OD	LENGTH	PART NUMBER	EURO
1/4"(6.35)	76.2	271-CB-6.4	70,00
3/8"(9.5)	76.2	271-CB-9.5	110,00



271-CB-6.4

### 30KV Vacuum breaks 50.4mm long ceramic, I.D. 31.7 mm

FLANGE	LENGTH	PART NUMBER	EURO
38.1mm ø	97	271-CB30K-32	180,00
40CF	107	271-CB30K-32-C40	285,00
40KF	104	271-CB30K-32-K40	285,00



271-CB-10K-59-C63

### 15KV Vacuum breaks 25.4 mm long ceramic, I.D. 16.0 mm

FLANGE	LENGTH	PART NUMBER	EURO
19mm ø	67	271-CB15K-16	185,00
16CF	92	271-CB15K-16-C16	285,00
16KF	92	271-CB15K-16-K16	285,00

### 30KV Vacuum breaks 117 mm long ceramic, I.D. 16.0 mm

FLANGE	LENGTH	PART NUMBER	EURO
19mm ø	117	271-CB30K-16	290,00
16CF	117	271-CB30K-16-C16	410,00
16KF	117	271-CB30K-16-K16	410,00



271-CB-35K-85-C100

### 35KV Vacuum breaks 60 mm long fluted ceramic

FLANGE	LENGTH	PART NUMBER	EURO
101mm ø	118	271-CB35K-85	900,00
100CF	135	271-CB35K-85-C100	1.350,00

Also available 60KV version.  
 Please call our Sales Office.

- 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

### Ceramic Stand-offs, Tube Feedthroughs, High Voltage Vacuum Breaks

Ceramic Stand-offs enable items, which must be held at voltage, to be insulated from the chamber.



273-CSO-10-10



273-CSO-50-20

#### Specification Ceramic Stand-off Isolators

Material	Steatite (MgO)
Screws	SS
Voltage Vac	see table
Voltage Air	approx. 25% of Vacuum rating

#### Ceramic Stand-off isolators height excludes screws

KV	HEIGHT X DIAM	PART NUMBER	EURO
7KV	10 X 10	273-CSO-10-10	40,00
10KV	12.7 X 10	273-CSO-13-10	40,00
12KV	16 X 12.7	273-CSO-16-13	40,00
35KV	51 X 13	273-CSO-51-13	40,00
35KV	51 X 19	273-CSO-51-20	40,00

### Tube Feedthroughs

Tube feedthroughs can be used to carry both current and water for water cooled components in the vacuum system.



272-TU6SS5K welding Version

#### Specification Tube Feedthroughs

Tube	6.35 mm OD SS tube
Leak rate	<math>5 \times 10^{-10}</math> mbar l/s
Test-Voltage	5KV DC
Current	depends on water flow

#### 5kV Tube feedthroughs

##### 1/4" (6.35mm) OD Stainless Steel Tubes

**REDUCED**

FLANGE	No. OF TUBES	PART NUMBER	EURO
16CF	1	272-TU6SS5K-C16	85,00
40CF	2	272-TU6SS5K-2-C40	160,00
40CF	3	272-TU6SS5K-3-C40	225,00
40CF	4	272-TU6SS5K-4-C40	275,00

Note 1: also available with Copper and Nickel Tube conductors

Note 2: also available with KF flanges

### High Voltage Vacuum Breaks up to 40KV

High Voltage vacuum breaks allow components to be coupled together with insulation of up to 40KV



271-CB-30K-51-C63

#### Specification 10kV to 40kV ceramic breaks

Vacuum	UHV
Materials	Ceramic, SS
Test Voltage DC	see Product table
I.D.	10KV : 7.9 mm 20KV: 23 mm 30KV: 51 mm 40KV: 61 mm

#### 10KV to 40KV Vacuum Breaks

##### Straight Ceramic, Weldable Versions

**REDUCED**

TUBE Ø	LENGTH	VOLTAGE	PART NUMBER	EURO
12.9	39.4	10KV	271-CB10K-8	290,00
30.5	65.5	20KV	271-CB20K-23	330,00
60.3	85.3	30KV	271-CB30K-51	390,00
71.1	110.7	40KV	271-CB40K-61	430,00

#### 10KV to 40KV Vacuum Breaks

##### Straight Ceramic, with CF Flanges

**REDUCED**

FLANGE	LENGTH	VOLTAGE	PART NUMBER	EURO
16CF	46.7	10KV	271-CB10K-8-C16	400,00
40CF	76.2	20KV	271-CB20K-23-C40	480,00
63CF	101.6	30KV	271-CB30K-51-C63	690,00
100CF	122.0	40KV	271-CB40K-61-C100	830,00

- 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

## Crimps, Connectors and Sockets

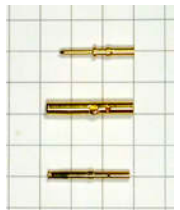
A full range of Crimps, Push-ons and Screw-on Connectors for electrical connection to the Air or Vacuum Side of Power Feedthroughs are offered.



Dimensions and Wire Maximum Sizes  
 - all in mm



Wire ØMax	Crimp Length	Crimp Diam.	Material
0.4	12.5	1.4	Au plated Cu
0.8	13.3	1.7	Au plated Cu
1.0	13.7	2.2	Au plated Cu
1.0	13.7	2.2	Au plated Cu
1.3	28.5	3.8	Au plated Cu
1.7	15.0	4.9	Au plated Cu



Wire ØMax	Crimp Length	Crimp Diam.	Material
0.8	13.2	1.3	Au plated Cu
1.0	14.0	2.2	Au plated Cu
1.0	14.0	2.2	Au plated Cu
1.3	16.0	3.7	Au plated Cu



Wire ØMax	Be Cu	Crimp Length	Crimp Diam.	Material
1.7	19.0	2.6		BeCu
1.7	19.0	2.6		BeCu
1.7	19.0	2.6		BeCu



Wire ØMax	Push-on Length	Push-on Diam.	Material
1.27	17.5	6.4	BeCu
1.27	17.5	6.4	BeCu
1.27	17.5	6.4	BeCu
1.27	17.5	6.4	BeCu
2.44	25.4	12.7	BeCu



Wire ØMax	Screw & Nut Length	Push-on Diam.	Material
-	50	7	Ag plated Cu



Wire ØMax	Socket Length	Socket Diam.	Material
1.5	12.7	4.8	BeCu
1.8	12.7	4.8	BeCu
3.8	14.2	6.3	BeCu
3.0	16.0	6.3	BeCu
6.6	25.4	12.7	BeCu



Wire ØMax	Material
-	Cu Ag plated
-	Cu



### Crimps Female fit to Feedthrough Pins Gold Plated Copper alloy

PIN SIZE	No PER PKT.	PART NUMBER	EURO
0.5 mm	10	360-CRF-05-10	45,00
0.7 - 0.8 mm	10	360-CRF-07-10	45,00
1.0 mm	10	212-PINF-10	13,00
1.0 mm	25	212-PINF-25	27,00
1.3 - 1.5 mm	5	360-CRIMP-1.3	43,00
2.3 - 2.4 mm	5	360-CRIMP-2.4	44,00

### Male Crimps to fit Female Crimps Gold Plated Copper alloy

PIN SIZE	QTY	PART NUMBER	EURO
0.7 - 0.8mm	10	360-CRM-07-10	18,00
1.0mm	10	212-PINM-10	8,00
1.0mm	25	212-PINM-25	17,00
1.3 - 1.5mm	5	360-CRIMP-1.3-M	39,00

### Power Crimps Beryllium Copper for Conductor 0.8, 1.3 and 1.6 mm

SIZE	No PER PKT.	PART NUMBER	EURO
0.8 mm	10	360-CRBC-0.8	63,00
1.3 mm	10	360-CRBC-1.3	40,00
1.6 mm	10	360-CRBC-1.6	40,00

### Power Push-ons with Allen Screw Beryllium Copper

PIN SIZE	No PER PKT.	PART NUMBER	EURO
1.0 mm	10	360-PPO-1.0	74,00
1.3 mm	10	360-PPO-1.3	50,00
1.5 mm	10	360-PPO-1.5	50,00
2.4 mm	10	360-PPO-2.4	50,00
6.4 mm	2	360-PPO-6.4	59,00

### Power Push-on with M5 screw and nut Silver plated copper alloy

PIN SIZE	No PER PKT.	PART NUMBER	EURO
4.0 mm	5	360-PPO-4.0	48,00

### Power In-line Screw-on Sockets Beryllium Copper

MAX PIN SIZE	No PER PKT.	PART NUMBER	EURO
1.5 mm	10	360-PIC-1.5	52,00
1.8 mm	10	360-PIC-1.8	52,00
3.0 mm	10	360-PIC-3.0	52,00
3.4 mm	10	360-PIC-3.4	82,00
6.6 mm	10	360-PIC-6.6	98,00

### Clamps for large conductors - 1 per packet Conductor from 2.0 to 19.0 mm

PIN SIZE	No PER PKT.	PART NUMBER	EURO
3.6 - 9.6 mm	1	360-CLAMP-9.6	85,00
19 mm (See P. 43)	1	360-CLAMP-19	419,00

**Thermocouple Feedthroughs, High Current, Combinations, Sockets and Wires**



**5.1 THERMOCOUPLE F/T TYPES K, N, C AND WIRES -> Page 5.2**

Thermocouple Feedthroughs Types K, N and C  
 Kapton Isolated Thermocouple wires  
 Bare Thermocouple wires  
 PTFE (Teflon) Isolated Thermocouple wires



**5.2 THERMOCOUPLE F/T TYPES R, S, T AND WIRES -> Page 5.4**

Thermocouple Feedthroughs TYPE R/S - with screw terminals  
 Bare Thermocouple wires – NO JUNCTION - 1.5 m long  
 Bare Thermocouple - with welded JUNCTION - 300 mm long



**5.3 COMBINATION POWER/ THERMOCOUPLE F/T -> Page 5.5**

Power Pins up to 30A  
 Power Pins up to 150A

**5.4 THERMOCOUPLE F/T WITH MS CIRCULAR SOCKETS -> Page 5.7**

Thermocouple Feedthrough with MS Air Side Sockets



**5.5 T/C Air Side Crimps -> Page 5.8**

Thermocouple Sockets  
 Screw & Nut Sets  
 Thermocouple Crimps

Type	(+) Material	(-) Material	EMV $\mu\text{V/K}$	Temp Range	Socket Col.	Remarks
K	Chromel® Ni-Cr	Alumel® Ni-Al	41	-200°C... 1250°C	Yellow	Most common, (-) magnetic, Hysteresis effects 250-600°C
N	Nicrosil® Ni-Cr-Si	Nisil® Ni-Si	28	-250°C... 1300°C	Pink/ Orange	Best wide range element high stability
C	W5%Re	W26%Re	15	0°C ... 2320°C	Red	For high temperatures, no IEC element F/T with extension grade material
E	Chromel® Ni-Cr	Constantan® Cu-Ni	68	-200°C... 900°C	Violet	High EMV rarely used
J	Iron	Constantan® Cu-Ni	53	0°C... 750°C	Black	Old style TC
T	Cu	Constantan® Cu-Ni	43	-200°C... 350°C	Blue	Old style TC Cryo use
R	Pt13%Rh	Pt	6	0°C... 1450°C	---	Very high stability, expensive F/T with extension grade material
S	Pt10%Rh	Pt	7	0°C... 1450°C	---	Very high stability, expensive F/T with extension grade material

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermocouple
- 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

## Thermocouple Feedthroughs Type K, C and N

Thermocouple feedthroughs have pins made from the corresponding thermocouple pair materials. On the vacuum side the pins terminate with a screw connector (included). The (+) pole is 25 mm shorter than the (-) pole.

Miniature T /C Connectors are included for the Air Side. The Type-N feedthroughs use screw connectors for air and vacuum side similar to R/ S types (see page 56)



### General Specification 262-TC (K, C or N)

Vacuum	UHV
Pin material	Type K,C* or N T/C
Pin length	(+) pole 25mm shorter than (-)pole
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C
Air sockets	Miniature TC Connector / Screw (N)
Vac side	Screw & nut
Weld-ø	1 to 3 pairs 19 mm 4 to 5 pairs 38 mm

\* extension grade material with the same thermo-electric properties for type C only

### Thermocouple Feedthroughs TYPE K 1 to 5 pairs including air side sockets

REDUCED

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	1	262-TCK-1-C16	105,00
16CF	2	262-TCK-2-C16	160,00
16CF	3	262-TCK-3-C16	240,00
40CF	4	262-TCK-4-C40	375,00
40CF	5	262-TCK-5-C40	440,00
16KF	1	262-TCK-1-K16	105,00
16KF	2	262-TCK-2-K16	160,00
16KF	3	262-TCK-3-K16	240,00
40KF	4	262-TCK-4-K40	375,00
40KF	5	262-TCK-5-K40	440,00

Also available as weldables

### Thermocouple Feedthroughs TYPE C 1 to 5 pairs including air side sockets

REDUCED

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	1	262-TCC-1-C16	105,00
16CF	2	262-TCC-2-C16	160,00
16CF	3	262-TCC-3-C16	240,00
40CF	4	262-TCC-4-C40	375,00
40CF	5	262-TCC-5-C40	440,00
16KF	1	262-TCC-1-K16	105,00
16KF	2	262-TCC-2-K16	160,00
16KF	3	262-TCC-3-K16	240,00
40KF	4	262-TCC-4-K40	375,00
40KF	5	262-TCC-5-K40	440,00

Also available as weldables

### Thermocouple Feedthroughs TYPE N 1 to 5 pairs including screw connectors

REDUCED

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	1	262-TCN-1-C16	110,00
16CF	2	262-TCN-2-C16	170,00
16CF	3	262-TCN-3-C16	296,00
40CF	4	262-TCN-4-C40	550,00
40CF	5	262-TCN-5-C40	678,00
16KF	1	262-TCN-1-K16	110,00
16KF	2	262-TCN-2-K16	170,00
16KF	3	262-TCN-3-K16	296,00
40KF	4	262-TCN-4-K40	550,00
40KF	5	262-TCN-5-K40	678,00

Also available as weldables



262-TCC-1-C16

### Pin Identification

<b>K Type</b>	
Temp. Range	-200°C to 1250°C
Pin length	+ pole (short) Chromel - pole (long) Alumel
Air side colour:	yellow
<b>C Type</b>	
Temp. Range	0°C to 2320°C
Pin length	+ pole (short) - pole (long)
Air side colour:	red
<b>N Type</b>	
Temp. Range	-250°C to 1300°C
Pin length	+ pole (short) Nicrosil - pole (long) Nisil screw connectors



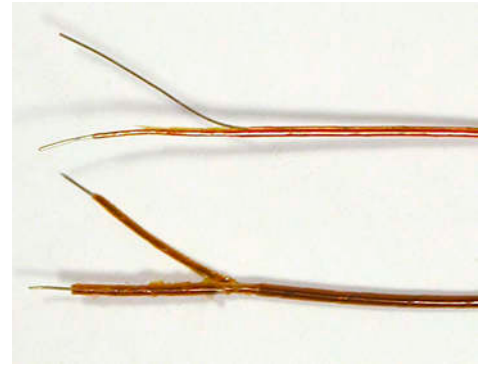
**Thermocouple Wires Type K / N / C**

For the most common types of Thermocouples, Allectra offers a variety of different thermocouple wires.

The standard wires come without TC connection at the end. As an option Allectra offers welded tips on bare or on the insulated wires. The tip can be left blank (best thermal contact) or electrically insulated with PTFE.

Single insulated  
312-KAP-TCK (top)

Double insulated  
311-KAP-TCK  
(bottom)



**General Specification 312-KAP-TC (K or N)**

Vacuum	UHV
Material	Kapton coated T/C wire
Wire-ø	2 x 0.25 mm (max. OD 0.9 mm)
Temp.	-200°C to 250°C (higher Temperature when stripped )
Insulation	Kapton outer insulation, inside (+) wire blank, (-) wire insulated

**General Specification 311-KAP-TC (K)**

Vacuum	UHV
Material	Kapton double insulated T/C wire Cromel (+) = yellow Alumel (-) = red
Wire-ø	2 x 0.25 mm (max OD 1.3 mm)
Temp.	-200°C to 250°C
Insulation	Kapton outer insulation, inside (+) wire yellow, (-) wire red

**General Specification 313-TC (K, C or N)**

Vacuum	UHV
Material	Bare T/C wire
Wire-ø	2 x 0.25 mm or 2 x 0.13 mm
Insulation	none
TC junction	on request

**General Specification 312-PTFE-TCK**

Vacuum	UHV
Material	PTFE insulated K type
Wire-ø	2 x 0.5 mm (max OD 1.4 x 2.5mm)
Temp.	-200°C to 250°C
Insulation	PTFE
TC junction	on request

**Kapton Isolated Thermocouple wires – NO JUNCTION  
Types K & N**

T/C TYPE	LENGTH	PART NUMBER	EURO
K	1 m	312-KAP-TCK-1M	35,00
K	5 m	312-KAP-TCK-5M	128,00
K	10 m	312-KAP-TCK-10M	240,00
N	1 m	312-KAP-TCN-1M	35,00
N	5 m	312-KAP-TCN-5M	128,00
N	10 m	312-KAP-TCN-10M	240,00

Note: Wires with junction made available on request

**Kapton Isolated Thermocouple wires – double insulated  
NO JUNCTION - Types K**

T/C TYPE	LENGTH	PART NUMBER	EURO
K	1 m	311-KAP-TCK-1M	45,00
K	5 m	311-KAP-TCK-5M	155,00
K	10 m	311-KAP-TCK-10M	290,00

Note: Wires with junction made available on request

**Bare Thermocouple wires – NO JUNCTION - Types K, C & N  
Original Material – No extension grade material**

T/C TYPE	LENGTH	PART NUMBER	EURO
K	1 m	313-TCK-025	12,00
C	30 cm	313-TCC-013*	POR
N	1 m	313-TCN-025	13,00

Note: Wires with junction made available on request

\* Wire diameter 0.13 mm, 0.25mm on request

**PTFE Isolated Thermocouple wires – NO JUNCTION  
Type K**

T/C TYPE	LENGTH	PART NUMBER	EURO
K	1 m	312-PTFE-TCK-1M	26,00
K	5 m	312-PTFE-TCK-5M	104,00
K	10 m	312-PTFE-TCK-10M	208,00

**Type K Kapton Isolated Thermocouple wires  
with welded tip junction**

TIP INSULATED	LENGTH	PART NUMBER	EURO
no	1 m	311-KAP-TCK-1-L	49,00
yes (PTFE)	1 m	311-KAP-TCK-1-X	54,00

also available in 2m length

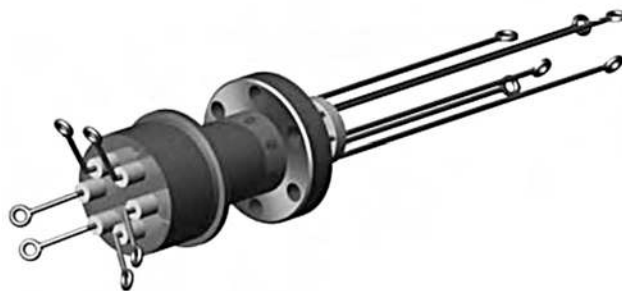
- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## Thermocouple Feedthroughs Type R/ S/ T

### Thermocouple Wires for Type K/ C/ N/ R/ S

In addition to the popular K, N and C thermocouples, Allectra offers the special purpose R, S and T types. Types R and S share the same feedthrough pin material and the same F/T may be used in both cases.

Type T is particularly suitable for cryogenic applications. Additionally types E and J are available to order.



#### General Specification 262-TC (R or S)

Vacuum	UHV
Pin material	R – extension grade
Pin length	+ pole 25mm shorter than -pole
Leak rate	< 5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C
Test-Resistivity	>1GΩ (pins to ground)
Air sockets	screw loops
Vac side	screw loops
Weld-∅	1 to 3 pairs 19 mm 4 to 5 pairs 38 mm

#### Pin Identification

R/ S Type	
Temp.	0°C to 1450°C
Pin length	+ pole (short) R: Pt 13% Rh, S:Pt 10% Rh - pole (long) R and S: Pt
	(F/T uses extension grade material)
T Type	
Temp.	-200°C to 350°C
Pin length	+ pole (short) Cu - pole (long) Constantan

#### General Specification 313-TC (K, C or N)

Vacuum	UHV
Material	Bare TC wire
Wire-∅	2 x 0.25 mm or 2 x 0.13 mm
Temp.	see table page 53
Insulation	none
T/C junction	standard type: None included in JOINT type

#### Thermocouple Feedthroughs Type R/S with screw terminals

**REDUCED**

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	1	262-TCR-1-C16	110,00
16CF	2	262-TCR-2-C16	170,00
16CF	3	262-TCR-3-C16	296,00
40CF	4	262-TCR-4-C40	478,00
40CF	5	262-TCR-5-C40	590,00
16KF	1	262-TCR-1-K16	110,00
16KF	2	262-TCR-2-K16	170,00
16KF	3	262-TCR-3-K16	296,00
40KF	4	262-TCR-4-K40	478,00
40KF	5	262-TCR-5-K40	590,00

Note 2 : also available for Thermocouples type T

Note 1 : also available as weldables

#### Bare Thermocouple wires – NO JUNCTION (1.5 m long) Types R & S - Original Material – Not extension grade

T/C TYPE	DIAMETER	PART NUMBER	EURO
R	0.13 mm	313-TCR-013	POR
R	0.25 mm	313-TCR-025	POR
S	0.13 mm	313-TCS-013	POR
S	0.25 mm	313-TCS-025	POR

Note: Wires with junction made available on request

#### Bare Thermocouple JUNCTION (300 mm long) Types K/ C/ N

T/C TYPE	DIAMETER	PART NUMBER	EURO
K	0.25 mm	313-TCK-JOINT	12,00
C	0.25 mm	313-TCC-JOINT	POR
N	0.25 mm	313-TCN-JOINT	13,00

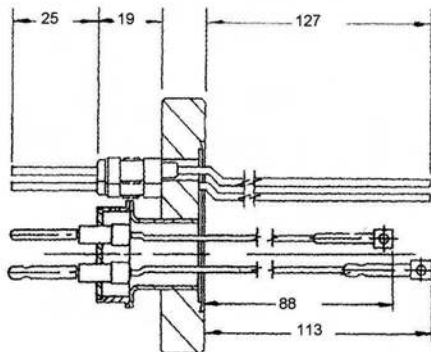
## Combination Power/ Thermocouple Feedthroughs

Combination Feedthroughs are intended for heaters where both power leads and temperature measurement are required.

Combination Feedthroughs are offered with either Nickel or Copper conductors and either K or C type thermocouple connections.

### Specification Combination T/C Power F/T

Vacuum	UHV
T/C type	K or C
Power pins	Copper/ Nickel
Pin-ø	1.3mm or 2.4mm
Leak rate	$<5 \times 10^{-10}$ mbar l/s
Temp.	-200°C to 450°C
Air sockets	T/C conductor included
Vac side	Screw & nut for T/C
Power pins	use 360-PPO-1.3 or 360-PPO-2.4



263-TCK-1-CU30-2-C16



263-TCK-1-NI05-2-C16



263-TCK-1-NI15-2-C16

### 2 Power Pins 1KV 15A + 1 Thermocouple F/T COPPER Conductor 1.3 mm -

REDUCED

FLANGE	T/C TYPE	PART NUMBER	EURO
16CF	K	263-TCK-1-CU15-2-C16	205,00
16CF	C	263-TCC-1-CU15-2-C16	205,00
16KF	K	263-TCK-1-CU15-2-K16	210,00
16KF	C	263-TCC-1-CU15-2-K16	210,00

### 2 Power Pins 5KV 30A + 1 Thermocouple F/T COPPER Conductor 2.4 mm

REDUCED

FLANGE	T/C TYPE	PART NUMBER	EURO
16CF	K	263-TCK-1-CU30-2-C16	230,00
16CF	C	263-TCC-1-CU30-2-C16	230,00
16KF	K	263-TCK-1-CU30-2-K16	230,00
16KF	C	263-TCC-1-CU30-2-K16	230,00

### 2 Power Pins 1KV 5A + 1 Thermocouple F/T NICKEL Conductor 1.3 mm

REDUCED

FLANGE	T/C TYPE	PART NUMBER	EURO
16CF	K	263-TCK-1-NI05-2-C16	200,00
16CF	C	263-TCC-1-NI05-2-C16	200,00
16KF	K	263-TCK-1-NI05-2-K16	205,00
16KF	C	263-TCC-1-NI05-2-K16	205,00

### 2 Power Pins 5KV 15A + 1 Thermocouple F/T NICKEL Conductor 2.3 mm

REDUCED

FLANGE	T/C TYPE	PART NUMBER	EURO
16CF	K	263-TCK-1-NI15-2-C16	257,00
16CF	C	263-TCC-1-NI15-2-C16	257,00
16KF	K	263-TCK-1-NI15-2-K16	257,00
16KF	C	263-TCC-1-NI15-2-K16	257,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermocouple
- 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

# 5.6 COMBINATION: HIGH CURRENT

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## Combination Power/ Thermocouple Feedthroughs-High Current Types

The high current types shown below are intended for applications where currents of up to 150 Amps are necessary together with temperature measurement. These feedthroughs may be used for Vacuum Furnaces.



### 5KV, 60 or 150A, 2 or 3 Power Pins + 1 Thermocouple COPPER Conductor on DN40CF

REDUCED

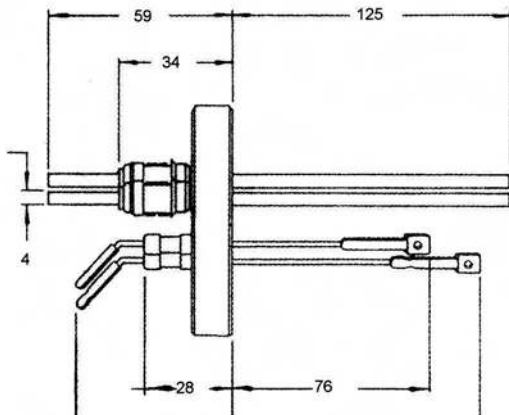
MAX AMPS	T/C TYPE	PART NUMBER	EURO
3 x 60A	K	263-TCK-1-CU60-3-C40	405,00
3 x 60A	C	263-TCC-1-CU60-3-C40	405,00
2 x 150A	K	263-TCK-1-CU150-2-C40	400,00
2 x 150A	C	263-TCC-1-CU150-2-C40	400,00

### Specification Combination High Current - T/C

Vacuum	UHV
T/C type	K or C
Power pins	Copper
Pin-ø	30A pin 2.4 mm 60A pin 4.0 mm 150A pin 6.35 mm
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s He
Temp.	-200°C to 450°C
Air sockets	T/C connectors included
Vac side	Screw & nut for T/C
Power pins	use 360-PPO-2.4 or 360-PPO-4 or 360-PIC-6.6



263-TCK-1-CU150-2-C40



263-TCK-1-CU60-2-C40

### 5KV 30, 60 or 150A, 2 or 3 Power Pins + 2 Thermocouple COPPER Conductor on DN40CF

REDUCED

MAX AMPS	T/C TYPE	PART NUMBER	EURO
3 x 30A	2 x K	263-TCK-2-CU30-3-C40	425,00
3 x 30A	2 x C	263-TCC-2-CU30-3-C40	425,00
3 x 60A	2 x K	263-TCK-2-CU60-3-C40	445,00
3 x 60A	2 x C	263-TCC-2-CU60-3-C40	445,00
2 x 150A	2 x K	263-TCK-2-CU150-2-C40	502,00
2 x 150A	2 x C	263-TCC-2-CU150-2-C40	502,00



263-TCK-2-CU60-3-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
- 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

## Thermocouple Feedthroughs with MS Circular Sockets

The MS circular connector is a very robust industrial grade socket. Up to 10 pairs of K type thermocouples are available in one MS style feedthrough.

Air Side MS Connector included.

Vacuum side crimp pins available - on page 60.

Double sided types with MS Sockets on the air and vacuum side are available to order.



### General Specification 263-TCK-MS

Vacuum	UHV
Pin material	Chromel / Alumel
Leak rate	$< 5 \times 10^{-10}$ mbar l/s
Temp.	-200°C to 450°C
MS Socket max	125°C
Air sockets	MS circular socket included
Vac side	1.4 mm pins

### Thermocouple F/T with MS Circular Air Side Sockets Type K

**REDUCED**

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	2	263-TCK-MS-2-C16	280,00
16CF	3	263-TCK-MS-3-C16	310,00
16CF	5	263-TCK-MS-5-C16	370,00
40CF	2	263-TCK-MS-2-C40	295,00
40CF	3	263-TCK-MS-3-C40	315,00
40CF	5	263-TCK-MS-5-C40	390,00
40CF	10	263-TCK-MS-10-C40	695,00
16KF	2	263-TCK-MS-2-K16	275,00
16KF	3	263-TCK-MS-3-K16	295,00
16KF	5	263-TCK-MS-5-K16	360,00
40KF	2	263-TCK-MS-2-K40	290,00
40KF	3	263-TCK-MS-3-K40	310,00
40KF	5	263-TCK-MS-5-K40	380,00
40KF	10	263-TCK-MS-10-K40	675,00

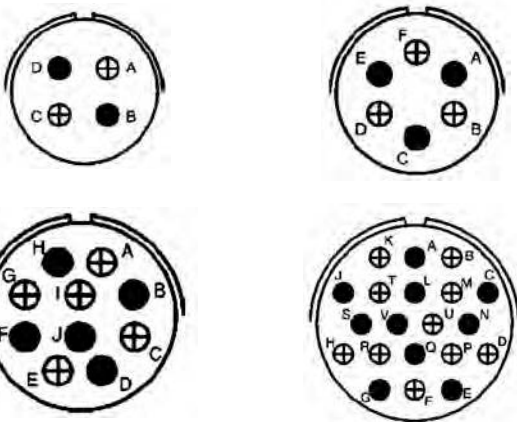
Note 1 : also available as weldables

Note 2 : also available as double sided versions

Note 3: also available for T/C types E and J



263-TCK-MS-2-C16



#### Polarity for TC Pins

View from the Air Side,

Black Pins: Chromel, Cross Marked Pins: Alumel

TOP ROW 2 and 3 Pairs,

LOWER ROW 5 and 10 pairs

Thermocouple Crimps for the Vacuum Side - see Page 60.



361-TCRIMP-CR

- 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
- 8 Valves
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- 15 HV / UHV Chambers
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### T/C Feedthrough Air Side Sockets

### Vacuum Side Sockets & Crimps

Standard Air Side T/C Sockets can be used up to 125°C High Temperature Air side Sockets up to 650°C are also offered. These ceramic versions can be used on the vacuum side as well. Ceramic plugs are available on request.



#### General Specification Sockets

##### Standard Type

Vacuum Air use only  
 TC type K, C, N, J or E  
 Temperature 125°C max.  
 Male connectors available on request

##### Ceramic Type

Vacuum UHV  
 TC type K, C, N  
 Temperature 650°C max.  
 Male connectors available on request



361-TCRIMP-CR

N.B. Thermocouple Feedthroughs include Air Side connectors. However, vacuum Side Crimps are not included and should be ordered separately.

See table on page 5.1.

#### General Specification Thermocouple Crimps

Vacuum UHV  
 Type Female Crimp Pins  
 Pin Diameter 1.4mm  
 Max. wire ø 1.25mm  
 Total length 33.5mm  
 Max. OD 3.2mm  
 Temperature 350°C max.

#### Standard Thermocouple Sockets

T/C TYPE	MAX. TEMP.	PART NUMBER	EURO
K	125°C	361-TC-CON-K	7,50
C	125°C	361-TC-CON-C	7,50
N	125°C	361-TC-CON-N	7,50
J	125°C	361-TC-CON-J	7,50
E	125°C	361-TC-CON-E	7,50

Plugs are available on request.

#### High Temperature Sockets - FEMALE 650°C

T/C TYPE	MAX. TEMP.	PART NUMBER	EURO
K	650°C	361-TC-CON-K-HT	25,00
C	650°C	361-TC-CON-C-HT	25,00
N	650°C	361-TC-CON-N-HT	25,00

#### Thermocouple Sockets - MALE UHV

T/C TYPE	MAX. TEMP.	PART NUMBER	EURO
K Air side	125°C	361-TC-CONM-K	5,00
N Air side	125°C	361-TC-CONM-N	5,00
C Air side	125°C	361-TC-CONM-C	7,00
K UHV	650°C	361-TC-CONM-K-HT	28,00

#### Screw and Nut sets - pack of 10 Size 3 - 48 fits Feedthroughs R, S and T

T/C TYPE	MAX. TEMP.	PART NUMBER	EURO
R/S/T	200°C	361-TC-SCREW	14,00

#### Thermocouple Crimps

MATERIAL	No PER PKT.	PART NUMBER	EURO
Chromel	5	361-TCRIMP-CR	70,00
Alumel	5	361-TCRIMP-AL	70,00
Iron	5	361-TCRIMP-FE	82,00
Constantan-J	5	361-TCRIMP-CONJ	82,00
Constantan-E-T	5	361-TCRIMP-CONET	82,00
Nickel	5	361-TCRIMP-NI	50,00

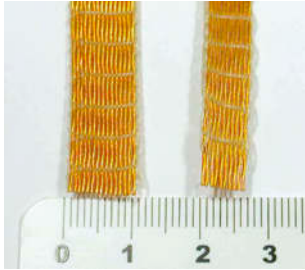
In Vacuum Wires, Cables, Connectors and Accessories



**6.1 KAPTON WIRES FOR UHV**

-> Page 6.2

Insulated Copper Wires from 0.1mm up to 1.7mm  $\varnothing$   
 Highly flexible multi-strand cables 0.25mm up to 2mm  $\varnothing$   
 Shielded coaxial wires for signal and high frequency



**6.2 KAPTON TWISTED PAIR AND RIBBON CABLES**

-> Page 6.4

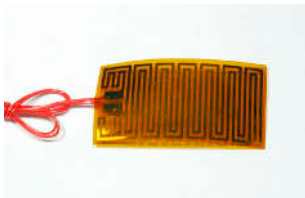
Twisted Pair with 1 and two pairs, shielded  
 Ribbon Cables with 4, 10, 15 strands



**6.3 CRYOGENIC WIRES**

-> Page 6.5

Special thin wires  
 Materials: Copper, Manganin and Konstantan



**6.4 READY MADE VACUUM CABLES**

-> Page 6.6

Coax cables for: SMA/ BNC/ MHV/ SH / N  
 Coax cables for single sided BNC/ MHV  
 Sub-D cables with 9 to 50 conductors  
 Special custom assemblies



**6.5 CRIMP PINS, CONNECTORS, ACCESSORIES**

-> Page 6.9

Crimp pins and connectors 0.5mm to 19mm  $\varnothing$   
 UHV Limit Switches, Heaters, PT100 sensors  
 Insulators, ceramic beads, Kapton tubes, UHV Shrink hose  
 Braid, UHV Solder , UHV Glue, UHV grease



**6.6 TOOLS CRIMPING AND WIRE STRIPPING**

-> Page 6.16

Wire Stripper  
 Pin Insertion and Removing tools  
 Crimp tools for Crimp pins and coaxial connectors



- 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

## Overview table

Alllectra offers the original types and a wide range of new Kapton® Wire Types for use in UHV and High Vacuum. These include:

- Single Strand Dipped Kapton Wire
- Highly Flexible Multi-strand Types
- Coaxial Wires including 50 Ohm types
- Shielded Twisted Pairs and Ribbon Cable
- The original Caburn UHV® KAP1 and KAP2 types.

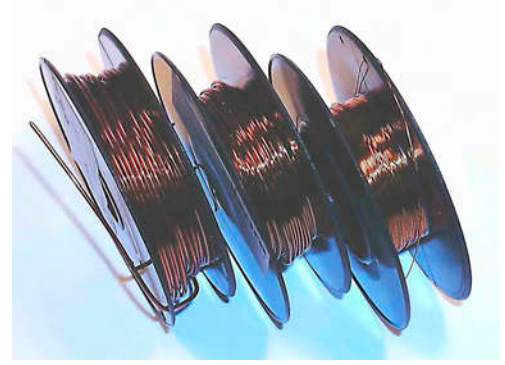


Type	∅ Cond. mm	∅ max. mm	V max V DC	I max A	Cond. mm <sup>2</sup>	R □ /km	Application Examples
<b>Plain Copper Wire, dipped</b>							
311-KAP-010	0,10	0,12	2.000	0,1	0,01	2.270	STM/ AFM, radiation environment
311-KAP-012	0,12	0,14	2.000	0,2	0,01	1.580	Fine instrumentation, radiation environment
311-KAP-014	0,14	0,16	2.000	0,2	0,02	1.160	Fine instrumentation, radiation environment
311-KAP-025	0,25	0,28	2.000	1,0	0,05	360	Fine instrumentation, radiation environment
311-KAP-060	0,63	0,69	2.000	5,0	0,31	58	Standard instrumentation, radiation environment
311-KAP-100	1,00	1,10	10.000	10,0	0,79	23	High current and high voltage applications, radiation environment
311-KAP-130	1,30	1,40	5.000	13,0	1,33	13,8	High current, radiation environment
311-KAP-170	1,70	1,85	12.000	17,0	2,2	8	Very high current and voltage
<b>Silver Plated Copper, wrapped</b>							
311-KAP1	0,25	0,55	4.000	1,0	0,05	360	Caburn UHV® Type, Signals and Sensors, easy to strip, general instrumentation
311-KAP2	0,60	0,90	4.000	4,5	0,28	64	Caburn UHV® Type, medium Current, easy to strip
311-KAPM-025	0,23	0,39	1.000	0,5	0,05	508	Highly Flexible instrumentaion, low current and low voltages
311-KAPM-035	0,35	0,50	1.000	1,0	0,08	225	Highly Flexible Wire, Sub-D connectors, low current and low voltage
311-KAPM-060	0,60	0,67	1.000	2,5	0,15	119	Highly flexible, Sub-D connectors, higher current
311-KAPM-075	0,75	0,81	1.000	5,0	0,33	53	Highly flexible high current wire, up to 10A for short periods
311-KAPM-100	1,00	1,17	1.000	9,0	0,6	30	Highly flexible high current wire, up to 10A for short periods
311-KAPM-200	2,00	2,20	1.000	20,0	2,0	8,9	Heaters, ideal for use with COMBO Sub-D f/t's
<b>50 Ohm and other Coax-Wire, shielded Twisted Pair Wire</b>							
311-KAP50	0,45	2,30	5.000	1,0	0,12	144	All 50 Ohm connectors/ signals, specially for use with SMA F/Ts which need shielding
311-KAP50S	0,23	1,45	1.000	0,50	0,12	508	Thin and highly flexible 50 Ohm wire, similar to RG178
311-KAPM-025-SHIELD	0,23	0,90	1.000	0,50	0,04	508	For all connectors, where shielding is required and shielding is grounded.
311-KAPM-060-COAX	0,60	1,40	1.000	2,5	0,15	119	For all connectors, where shielding is required but no high frequency is involved.
311-KAPM-060-PAIR1	2 x 0,6	1,70	1.000	2,0	0,15	119	Signals, high frequency supplies, Limit Switches
311-KAPM-060-PAIR2	4 x 0,6	2,20	1.000	2,0	0,15	119	Signals, Stepper Motor connections
<b>Ribbon Cable</b>							
311-KAP-RIB04/ 4 Way Compact	4 x 0,35	0,5 x 3	1.000	1,0	0,08	225	Sub-D Connections, General Purpose
311-KAP-RIB10/ 10 Way Compact	10 x 0,35	0,5 x 6	1.000	1,0	0,08	225	Sub-D Connections, General Purpose
311-KAP-RIB15/ 15 Way Compact	15 x 0,35	0,5 x 10	1.000	1,0	0,08	225	Sub-D Connections, General Purpose
<b>Manganin Wire</b>							
312-KAP-MAN-014	0,14	0,18	1.000	0,1	0,02	27.900	Manganin® Wire for Low temperature applications
312-KAP-MAN-025	0,25	0,55	6.000	0,2	0,05	8.700	Manganin® Wire for Low temperature applications



**KAPTON WIRES and RIBBON CABLE**

- Suitable for use in UHV
- No trapped volumes because Kapton is a porous material
- Bakeable to 250°C
- Single Strand or Multi-strand (high flexibility) Types
- Wire Stripper, Kapton Solvent and Accessories
- Very thin wires for applications like STM/AFM
- High current wires up to 20 Amps



**Single Strand Specifications**

Vacuum	UHV
Conductor	Copper
Insulation	Dipped Kapton®



311-KAP-060

**Kapton Wires for UHV  
Single strand dipped types - Copper conductor**

Ø	AWG	LENGTH	PART NUMBER	EURO
0.10 mm	38	5 m	311-KAP-010-5M	95,00
0.10 mm	38	10 m	311-KAP-010-10M	175,00
0.12 mm	36	10 m	311-KAP-012-10M	121,00
0.14 mm	35	10 m	311-KAP-014-10M	121,00
0.25 mm	30	10 m	311-KAP-025-10M	65,00
<b>NEW</b> 0.40 mm	26	10 m	311-KAP-040-10M	67,00
0.63 mm	22	10 m	311-KAP-060-10M	69,00
<b>NEW</b> 1.00 mm	18	10 m	311-KAP-100-10M	89,00
<b>NEW</b> 1.02mm 2kV Ver.	10 m	311-KAP-102-10M	78,00	
1.30 mm	16	5 m	311-KAP-130-5M	52,00
1.30 mm	16	10 m	311-KAP-130-10M	94,00
1.70 mm	14	5 m	311-KAP-170-5M	97,00
<b>NEW</b> 1.80 mm	13	5m	311-KAP-180-5M	

**Silver Plated Specifications**

Vacuum	UHV
Conductor	Copper, silver plated
Insulation	Wrapped Kapton®

**Kapton Wires for UHV  
Silver Plated Copper Conductor**

Ø	AWG	LENGTH	PART NUMBER	EURO
0.25 mm	30	10 m	311-KAP1-10M	71,00
0.6 mm	22	10 m	311-KAP2-10M	84,00

**Multistrand Specifications**

Vacuum	UHV
Conductor	Copper stranded, silver plated
Insulation	Wrapped Kapton®

**Kapton Wires for UHV  
Multi-strand High Flexibility types**

Ø	AWG	LENGTH	PART NUMBER	EURO
0.25 mm	30	10 m	311-KAPM-025-10M	81,00
0.35 mm	28	10 m	311-KAPM-035-10M	85,00
0.60 mm	22	10 m	311-KAPM-060-10M	95,00
0.75 mm	21	10 m	311-KAPM-075-10M	102,00
1.00 mm	18	10 m	311-KAPM-100-10M	108,00
2.20 mm	11	5 m	311-KAPM-200-5M	165,00
<b>NEW</b> 0,35 mm		10m	311-KAPM-035-RAD-10M	98,00
0.60 mm		10m	311-KAPM-060-RAD-10M	109,00
1.00 mm		10m	311-KAPM-100-RAD-10M	124,00

**NEW** Radiation Resistant versions (up to 10<sup>9</sup> rad) are available in the sizes 0,35mm / 0,60mm / 1mm Ø (see right) as 50 Ohm coaxial cable and as Thermocouple Type K version.

**Ribbon cable specifications**

Vacuum	UHV
Wire	311-KAPM-035
Binding	PEEK unfilled

**Kapton Ribbon Cable for UHV  
Silver plated Copper conductor**

No. OF WIRES	LENGTH	PART NUMBER	EURO
4	1 m	311-KAP-RIB4-1000	43,00
10	1 m	311-KAP-RIB10-1000	75,00
15	1 m	311-KAP-RIB15-1000	110,00
25	1 m	311-KAP-RIB25-1000	155,00



311-KAP-PIB15  
311-KAP-RIB10

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

## Kapton® Coaxial types and Twisted Pairs for UHV

- Coaxial Kapton Wires with or without outer shield
- 50 Ω Coaxial Wire
- Shielded Twisted Pairs recommended for In-vacuum Motors
- PTFE Coaxial Wires for High Frequency applications



### Specification Coaxial types

Construction 311-KAPM060-COAX:  
 Conductor 0.6mm ø (19x 0.12mm), Kapton insulation, Shield silver plated copper, Kapton insulation, ~500pF/m

Construction 311-KAPM025-SHIELD:  
 Conductor 0.23mm ø (7x 0.08mm), Kapton insulation, Shield silver plated copper, blank, ~125pF/m

### Coaxial Kapton Wires for UHV Shielded Multi-strand/ High Flexibility types

OD DIAMETER	LENGTH	PART NUMBER	EURO
1.4 mm	10 m	311-KAPM-060-COAX	126,00
0.9 mm*	10 m	311-KAPM-025-SHIELD	98,00

\* no outer insulation

### 50 Ohm Coaxial types

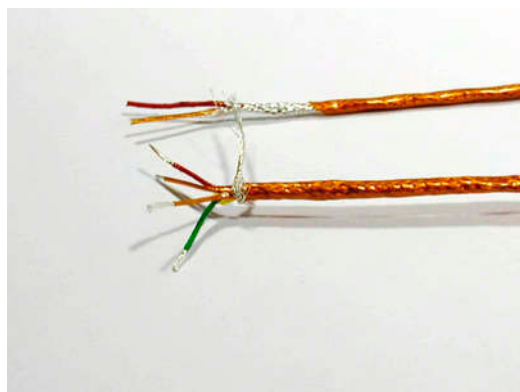
Standard type	311-KAP50
Impedance	50 Ohm
Conductor	Silver plated Cu -7 x 0.15mm
Capacitance	115pf/m
Damping	0.1 db/m at 100MHz 1.1 db/m at 500MHz 1.9 db/m at 1GHz
Miniature type	311-KAP50S
Impedance	50 Ohm
Conductor	Silver plated Cu -7 x 0.08mm
Capacitance	120pf/m
Damping	~3 db/m at 1GHz

### 50 Ω Coaxial Kapton Wires for UHV Outer Diameter 2.3 mm

IMPEDANCE	LENGTH	PART NUMBER	EURO
50 Ohm	5 m	311-KAP50	142,00
50 Ohm	1 m	311-KAP50-1M	45,00

### Miniature 50 Ω Coaxial Kapton Wires for UHV Outer Diameter 1.4 mm

IMPEDANCE	LENGTH	PART NUMBER	EURO
50 Ohm	5 m	311-KAP50S	138,00
50 Ohm	1 m	311-KAP50S-1M	42,00



311-KAPM-060-PAIR1 and PAIR2

### PTFE 50 Ω Coaxial Wire for UHV Outer Diameter 1.75 mm - RG 178 and 2.9 mm - RG316D

TYPE*	LENGTH	PART NUMBER	EURO
RG 316D	1 m	312-PTFE50-D	18,00
RG 178	1 m	312-PTFE50-S	12,00

\* Please ask for PTFE wires data sheet

### General Specification Twisted Pair

Type	1 or 2 pairs with shield
Wire:	uses 311-KAPM060 Multi-strand type
Outer Coating:	Kapton
One wire per pair is	Coloured Kapton
Capacitance	~150 pF/m, core - core ~245 pF/m, core - shield

### Twisted Pair Wires for UHV Shielded with Kapton Insulation

PAIRS	LENGTH	PART NUMBER	EURO
1	5 m	311-KAPM-060-PAIR1	105,00
2	5 m	311-KAPM-060-PAIR2	161,00

**Cryogenic and Other Wires**

- Manganin Wire for CRYOGENIC use
- PTFE Insulated Constantan Wire
- Nickel Plated Copper Braid
- PTFE Ribbon Cable
- Bare Tungsten and Tantalum Wire for heaters



**Specification Manganin Wire**

Vacuum:	UHV
Conductor:	Manganin® (CuNiMn)
Insulation:	Kapton
Voltage:	1KV (0.14 mm) / 6KV (0.25 mm)
Resistivity	0.43 $\square$ mm <sup>2</sup> / m
Conductance	22 W/ m K

**Specification Constantan Wire**

Vacuum:	UHV
Conductor:	Constantan®
Insulation:	PTFE
Voltage:	2KV
Resistivity	0.49 $\square$ mm <sup>2</sup> / m
Conductance	23 W/ m K

**Specification Braid**

Vacuum	UHV
Material	Copper, Nickel plated



*Braid, packed on a plastic tube for easy use*

**Specification PTFE RIBBON Cable**

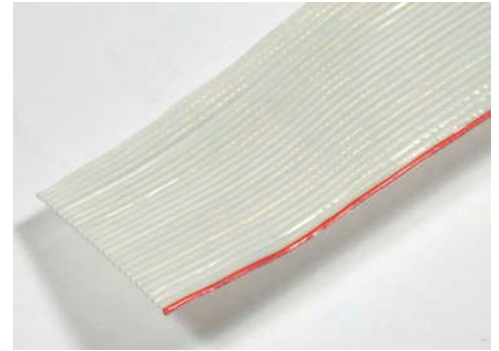
Conductor	Silver plated Copper multi-strand 7 x 0.127 mm $\varnothing$ , 1.27 mm Pitch
Insulation	PTFE



*Typical application of bare wire: Used together with ceramic tubes (see page 6.13), a compact heater can be made.*

**Specification Heater Wire**

Vacuum	UHV
Wire	Tantalum/ Tungsten



*PTFE ribbon cable  
312-PTFE-RIB-25*

**KAPTON insulated Manganin Wire for cryogenic use**

DIAMETER	LENGTH	PART NUMBER	EURO
0.14 mm	5 m	312-KAP-MAN-014-5M	95,00
0.14 mm	10 m	312-KAP-MAN-014-10M	145,00
0.25 mm	5 m	312-KAP-MAN-025-5M	106,00
0.25 mm	10 m	312-KAP-MAN-025-10M	162,00

**PTFE insulated Constantan Wire for cryogenic use**

DIAMETER	LENGTH	PART NUMBER	EURO
0.08 mm	10 m	312-PTFE-008-KON	85,00

**Braid Nickel plated Copper, per Meter**

NOM. ID	RANGE	PART NUMBER	EURO
3.0 mm	2 - 6 mm	316-BRAID3	15,00
4.0 mm	3 - 8 mm	316-BRAID4	17,00

**PTFE Ribbon Cable for UHV Silver plated Copper conductor**

No. OF WIRES	LENGTH	PART NUMBER	EURO
10	1 m	312-PTFE-RIB10	31,00
15	1 m	312-PTFE-RIB15	42,00
25	1 m	312-PTFE-RIB25	60,00

**Bare Wire for heaters Tantalum/ Tungsten, per Meter**

DIAMETER	Material	PART NUMBER	EURO
0.25 mm	Tantalum	315-TA-025	48,00
0.2 mm	Tungsten	315-W-020	48,00

- 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

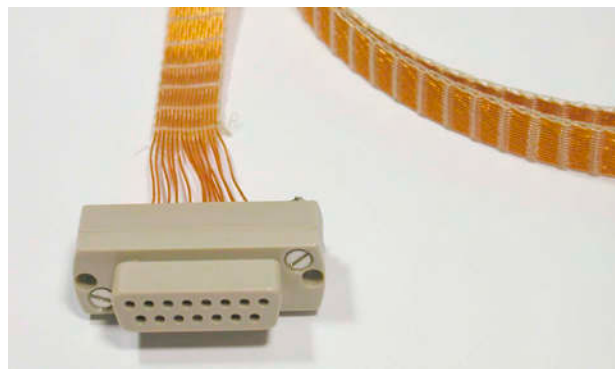
- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
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## Ready Made In-vacuum Cables

### Sub-miniature D Types

Standard Sub-D cables are made with ribbon cable (Kapton or PTFE). These versions are listed here. Many other types can be offered on request:

- Single strand wires or shielded cables
- HV and UHV Types
- Different connectors at either end
- Second Shielding



#### Sub-D KAPTON Ribbon Cable - 500 mm long HV Socket to Open End

No. OF WIRES	LENGTH	PART NUMBER	EURO
9	500 mm	380-D09FXHR-500	143,00
15	500 mm	380-D15FXHR-500	178,00
25	500 mm	380-D25FXHR-500	229,00
37	500 mm	380-D37FXHR-500	344,00
50	500 mm	380-D50FXHR-500	418,00

#### Sub-D PTFE Ribbon Cable - 500 mm long HV Socket to Open End

No. OF WIRES	LENGTH	PART NUMBER	EURO
9	500 mm	380-D09FXHPT-500	118,00
15	500 mm	380-D15FXHPT-500	140,00
25	500 mm	380-D25FXHPT-500	175,00

#### Sub-D KAPTON Ribbon Cable - 500 mm long PEEK UHV Socket to Open End

No. OF WIRES	LENGTH	PART NUMBER	EURO
9	500 mm	380-D09FXPR-500	224,00
15	500 mm	380-D15FXPR-500	282,00
25	500 mm	380-D25FXPR-500	335,00
37	500 mm	380-D37FXPR-500	472,00
50	500 mm	380-D50FXPR-500	548,00

#### Sub-D KAPTON Ribbon Cable - 500 mm long CERAMIC UHV Socket to Open End

No. OF WIRES	LENGTH	PART NUMBER	EURO
9	500 mm	380-D09FXUR-500	264,00
15	500 mm	380-D15FXUR-500	328,00
25	500 mm	380-D25FXUR-500	397,00
37	500 mm	380-D37FXUR-500	528,00
50	500 mm	380-D50FXUR-500	625,00

#### Sub-D KAPTON Ribbon Cable - Extension lengths All Ribbon cables

No. OF WIRES	LENGTH	PART NUMBER	EURO
9	+500 mm	380-EXT-09	38,00
15	+500 mm	380-EXT-15	58,00
25	+500 mm	380-EXT-25	80,00
37	+500 mm	380-EXT-37	134,00
50	+500 mm	380-EXT-50	158,00

#### Ribbon Cable Specification

Vacuum	HV/ UHV
Type of connector	HV / UHV PEEK / UHV CERAMIC
Gender	Female (fits to Feedthrough)
Type of cable	PTFE Ribbon / Kapton Ribbon



Example of two custom cables:  
 Top: Single wires used with HV Sub-D connectors including housing and strain relief

Bottom: Single wires with second shielding. A standard and a small 15-way connector are used on this type



## SMA / BNC 50 OHM Cables

For signal and High Frequency use, Coaxial cables with SMA and BNC connectors are listed here.

Versions with open end as well as with two connectors are offered, SMA is also offered with female types.

Standard length are 0.5 m and 1m, other lengths can be made according to your requirements.



### Specification SMA-Cable

Vacuum	UHV
Type	Male/ Female/ Open
Test voltage	500V DC
Insulation test	>1 GOhm (core to shield)

- 18 GHz cables see Sec. 3 -

### Specification BNC Cable

Vacuum	UHV
Type	Male/ Open
Test voltage	500V DC
Insulation test	>1 GOhm (core to shield)



380-BNC-MX-500



Female SMA connector on the cable 380-SMA-MF-500

### SMA 50 OHM Cables 500 mm long MALE plug to open end/ SMA male/ SMA female

TYPE1	TYPE2	PART NUMBER	EURO
SMA	OPEN	380-SMA-MX-500	98,00
SMA	SMA	380-SMA-MM-500	159,00
SMA	SMA female	380-SMA-MF-500	169,00

### BNC 50 OHM Cables, 500 mm long BNC to open end/ BNC

TYPE1	TYPE2	PART NUMBER	EURO
BNC	OPEN	380-BNC-MX-500	101,00
BNC	BNC	380-BNC-MM-500	162,00

### SMA/ BNC 50 OHM Cables Extended length per 500 mm

TYPE	LENGTH	PART NUMBER	EURO
SMA	per 0.5 m	380-SMA-EXT05	23,00
BNC	per 0.5 m	380-BNC-EXT05	23,00

### SMA/ BNC 50 OHM Cables - Additional cost up to 1.0 m Double shielded TRIAX cables - horseshoe contact option

TYPE	LENGTH	PART NUMBER	EURO
No contact	to 1m	360-DS	48,00
Contact	to 1m	360-DS-C	59,00

380-SMA-MM-500 cable with double shield option and contact 360-DS-C

The standard horseshoe used is for an M3 screw.



- 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

**Other In-Vacuum Cables and spare Sockets**

On this page you will find cables with the following connectors:

- SHV / MHV / Microdot
- IVCX Type for Single Sided BNC (also fits Single Sided MHV)

In addition all the various connectors are offered on their own for customer installation.



380-IVCX-500

**Vacuum Ready Cables Specification**

Vacuum	UHV
Temperature	-40°C to 200°C
Surface	SHV / MHV: Silver plated with gold plated conductor Microdot: Gold plated IVCX: Stainless steel with gold plated conductor
Insulation	PTFE; PEEK (for IVCX)
Test-Resistivity	>1 GOhm conductor to screen

**Kapton Coaxial SHV Cable - 50 Ohm type  
SHV5 to open end**

TYPE	LENGTH	PART NUMBER	EURO
SHV	500 mm	380-SHV-FX-500	136,00
SHV	1000 mm	380-SHV-FX-1000	159,00

Feedthrough is Male

**Kapton Coaxial MHV Cable - 50 Ohm type  
MHV to open end**

TYPE	LENGTH	PART NUMBER	EURO
MHV	500 mm	380-MHV-FX-500	101,00
MHV	1000 mm	380-MHV-FX-1000	127,00

Notice: Cable with male connector available.

Feedthrough is Male

**Kapton Co-axial MICRODOT Cable - 50 Ohm type,  
500 mm long MICRODOT to open end or SMA or BNC**

TYPE 1	TYPE 2	PART NUMBER	EURO
MIC	open	380-MIC-MX-500	157,00
MIC	MIC	380-MIC-MM-500	277,00
MIC	SMA	380-MIC-SMA-500	218,00
MIC	BNC	380-MIC-BNC-500	218,00

Microdot Feedthrough is Female



Cables with SHV (left) and MHV (right) UHV connectors. SHV, MHV and Microdot connectors use a Viton tube for cable clamping



380-MIC-MX-500

380-IVCL Connector for F/T's which require a 19.8mm connection. For details please contact the sales office.



Components of the 245-CON-MIC connector. All connectors come with an assembly manual

**Coaxial Kapton Cables  
General purpose type fits 241-BNC and 241-MHV types**

TYPE	LENGTH	PART NUMBER	EURO
Coaxial	0.5 m	380-IVCX-500	210,00
Coaxial	0.5 m	380-IVCL-500	210,00

Impedance of these connectors not constant

**Self assembly In-Vacuum Cable Connectors  
fit to 311-KAP50 cable**

TYPE	No PER PKT.	PART NUMBER	EURO
BNC	1	245-CON-BNC	42,00
MHV	1	245-CON-MHV	76,00
MHV-male	1	245-CON-MHV-M	88,00
SHV	1	245-CON-SHV	80,00
N	1	245-CON-N	66,00
Microdot	1	245-CON-MIC	101,00

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  
Hardware  
CF  
11  
KF  
Hardware  
12  
ISO-K  
Hardware  
13  
Adaptors  
Specials  
14  
HV / UHV  
Chambers  
15  
Atlas  
Bi-Metal  
16

Sockets and Crimps

Here you can find a Selection of Accessories for In-Vacuum Cables:

- Screw on Connectors
- Crimp pins and Connectors 0.5 mm to 2.4 mm ø
- Push-On screw connectors

More components like Insulators, Ceramic Beads, Kapton tubes, UHV Shrink Hose, Braid, UHV Solder , UHV Glue, UHV grease will follow on the next pages

Specification Screw-on Socket

Max Current	20 ... 35A
Temperature	300 °C
Material	Copper-Beryllium
Reference	PIC



Screw-on Socket  
Beryllium Copper

MAX ID	No PER PKT.	PART NUMBER	EURO
1.5 mm	10	360-PIC-1.5	52,00
1.8 mm	10	360-PIC-1.8	52,00
3.0 mm	10	360-PIC-3.0	52,00
3.4 mm	10	360-PIC-3.4	82,00
6.6 mm	10	360-PIC-6.6	98,00

Specification Power-Crimp

Max Current	3A (0.8mm) / 10A (1.3 + 1.6mm)
Temperature	300 °C
Material	Copper-Beryllium
Reference	CRBC

NEW

Power Crimps  
Beryllium Copper

MAX ID	No PER PKT.	PART NUMBER	EURO
0.8 mm	10	360-CRBC-0.8	63,00
1.3 mm	10	360-CRBC-1.3	40,00
1.4mm	10	360-CRBC-1.4	40,00
1.6 mm	10	360-CRBC-1.6	40,00

Specification Push-on Socket

Max Current	25 A
Temperature	250 °C
Material	Copper-Beryllium
Reference	PPO

Push-on Sockets  
Beryllium Copper

MAX ID	No PER PKT.	PART NUMBER	EURO
1.0 mm	10	360-PPO-1.0	74,00
1.3 mm	10	360-PPO-1.3	50,00
1.5 mm	10	360-PPO-1.5	50,00
2.4 mm	10	360-PPO-2.4	50,00
6.3 mm	2	360-PPO-6.3	59,00



360-CRIMP-1.3

360-CRIMP-1.3on High Current Feedthrough



360-PPO-1.3

Max. wire diameter is 1.25mm (up to 360-PPO-2.4) and 2.4mm for 360-PPO-6.3

Crimps Female to fit Feedthroughs  
Gold plated copper alloy

MAX ID	No PER PKT.	PART NUMBER	EURO
0.5 mm	10	360-CRF-05-10	45,00
0.75 mm	10	360-CRF-07-10	45,00
1.5 mm	5	360-CRIMP-1.3	43,00
2.4 mm	5	360-CRIMP-2.4	44,00

Crimps MALE to fit Female Crimps  
Gold plated copper alloy

MAX ID	No PER PKT.	PART NUMBER	EURO
0.75 mm	10	360-CRM-07-10	18,00
1.5 mm	5	360-CRIMP-1.3-M	39,00
2.4 mm	5	360-CRIMP-2.4-M	39,00

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  
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## Crimps, Connector blocks; Limit Switches

Cable-lugs are a convenient way to connect In-vacuum Cable to other parts.

The In-vacuum Cable connectors can be used either for high current lines or for coaxial cables.

Normally Closed Limit Switches are offered in 2 different sizes. They come with plug-in contacts of 1mm diameter.



### Specification Cable Shoes with Ring

Vacuum	HV/ UHV
Diameter	max. cable Ø 1.0mm to 2.5mm
Material	Cu, Tin plated / Nickel
Temp.	max 200°C / 400°C Nickel versions



### Cable Shoes with Ring or Horseshoe connection Fit M2 to M5 screws

CABLE	MOUNT HOLE	QTY	PART NUMBER	EURO
1.5 mm	M3	5*	360-RING-1.5-M3-NI	29,00
1.5 mm	M4	5*	360-RING-1.5-M4-NI	30,00
2.2mm	M4	5*	360-RING-2.2-M4-NI	33,00
1.0 mm	M2	10	360-RING-1.0-M2	18,00
1.0 mm	M3	10	360-RING-1.0-M3	18,00
1.7 mm	M2	10	360-RING-1.7-M2	18,00
1.7 mm	M3	10	360-RING-1.7-M3	18,00
2.4 mm	M3	10	360-RING-2.4-M3	18,00
1.0 mm	M3	10	360-LUG-1.0	18,00
1.7 mm	M3	10	360-LUG-1.7	18,00
2.5 mm	M5	5	360-LUG-2.5	12,00

\* ) Nickel versions

For installation of cable lugs  
and rings use  
321-CTOOL-RING



### Specification Connector Block

Vacuum	UHV
Material	PEEK housing
Temp.	bakeable to 230°C
High current	up to 10A

360-CON-HC  
with these connectors  
either a high current  
connection or a coaxial  
connection (360-CON-  
COAX) can be made.



### Connector Blocks for UHV PEEK

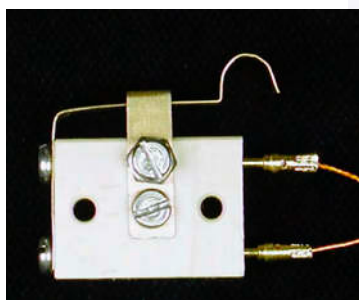
PINS	CONTACTS	PART NUMBER	EURO
4	2 X 2	360-SC2X2-1.8	96,00
4	1 X 4	360-SC1X4-1.8	76,00
6	1 X 6	360-SC1X6-1.8	104,00
8	1 X 8	360-SC1X8-1.8	139,00

### In-Vacuum Cable Connectors PEEK set of Plug and Socket

TYPE	FITS	PART NUMBER	EURO
HC	KAPM-200	360-CON-HC	62,00
Co-axial	KAP50	360-CON-COAX	68,00

### UHV Limit Switch Normally Closed Gold Plated Contacts

SIZE (mm)	MAIN BODY	PART NUMBER	EURO
25x17x8	15x10x6	363-SWITCH-1	179,00
25x17x8	20x10x6	363-SWITCH-2	179,00
25x23x8	20x15x6	363-SWITCH-3	179,00



363-SWITCH-3

- 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



## UHV Lubricants, Thermal Contact pads, Glue and Kapton Solvent

Here you can find a Selection of In-Vacuum Accessories:

- UHV Lubricant
- UHV Leak Sealant
- Liquid Metal / Contact pads
- UHV Glue
- Kapton removal paste



### Specification UHV Lubricant

Temperature	-50°C to 200 °C
Vapour pressure at	
20°C	~5 x 10 <sup>-13</sup> mbar
100°C	~1 x 10 <sup>-10</sup> mbar
125°C	~1 x 10 <sup>-9</sup> mbar
150°C	~1 x 10 <sup>-8</sup> mbar

### UHV Lubricant suitable for use from -50°C to 200°C

SIZE	PART NUMBER	EURO
10g	330-MCOTE-296	128,00



### Specification UHV Dry Lubricant

Quality	highly pure MoS <sub>2</sub>
Temperature	in-vacuum 1100°C air-side up to 450°C

### UHV Dry Lubricant MoS<sub>2</sub>

SIZE	MAX.TEMP	PART NUMBER	EURO
10g	1100°C (Vac)	330-MOS2-10G	11,00

### Specification Vacseal

Operational Area	Leak-proof medium for small leaks
Size	Container with brush, 14ml
Vacuum	UHV

### Leak Sealant VACSEAL

SIZE	PART NUMBER	EURO
14ml	330-VACSEAL-S	69,00

### Specification thermal Contact Pad/ Liquid

Thermal contact, not suitable for Aluminium	
Melting point	8°C (TCL) / 58°C (TCP)
Contain no Cadmium, Lead, Zinc	
Vapour pressure	<10 <sup>-8</sup> mbar at 500°C
Boilung point	>1300°C (TCL) / >1500°C (TCP)

### thermal Contact Pad/ Liquid

**NEW**

TYPE	QTY	PART NUMBER	EURO
Metal foil	20x20 mm	317-TCP-20X20	26,00
Metal foil	38x38 mm	317-TCP-38X38	48,00
Liquid Metal	1g	317-TCL-1	39,00

### Specification UHV Glue

2 component glue, solvent-free, hot hardening (130°C)	
No filler, high chemical stability, Temperature stability from 77K up to 250°C	
Glue1	General use, medium viscosity, leak tight
Glue2	Use like varnish, high viscosity
Glue3	Silver filled glue, conducting

### UHV Glue 2 component solvent free

TYPE	QTY	PART NUMBER	EURO
UHV	30g	330-GLUE1	109,00
UHV	30g	330-GLUE2	186,00
UHV	25g	330-GLUE3	278,00

### Specification KAPEX Solvent Paste

Description	
Kapex dissolves Kapton and allows the insulation of Kapton Wire to be removed. The wire is coated in Kapex and Al foil and heated to 60-80°C. The dissolved Kapton can then be washed off.	
Ready for use paste in syringe.	

### KAPEX Kapton Solvent Paste

SIZE	PART NUMBER	EURO
15g	315-KAPEX-S	52,00
30g	315-KAPEX-M	74,00

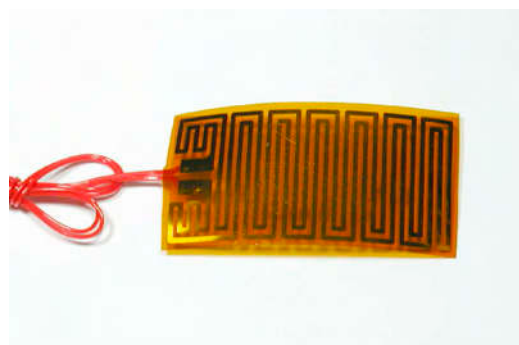
- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
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## Heaters, Ceramic Beads, Cable Ties

Various heaters are offered here: Heater Foils and Miniature Ceramic Heaters.

Ceramic Beads can be used, when temperatures are too high for Kapton insulated cables.

Cable Ties made from 316 SS are useful for cable fixation inside the vacuum system.



### Specification Kapton Heater Foils

Vacuum	to 10 <sup>-9</sup> mbar
Temperature	-200°C to 200°C

### Kapton Heater Foils - Circular or square Cable length 300 mm - PTFE wires

POWER	SIZE	PART NUMBER	EURO
8W/26□/0.55A	12.7 ø	317-KAPH-0.5	80,00
42W/78□/0.73A	25 x 25	317-KAPH-1/1	87,00
91W/39□/1.5A	25 x 50	317-KAPH-1/2	92,00
110W/185□/0.77A	50 x 50	317-KAPH-2/2	105,00
490W/43□/3.37A	102 x 102	317-KAPH-4/4	186,00



316-TIE-150

### Kapton Heater Foils - Cable length 500 mm Circular or Square with Kapton wires (311-KAPM-035)

POWER	SIZE	PART NUMBER	EURO
45W/60□/0.9A	15 x 76	317-KAPH-15x76	89,00
125W/160□/0.9A	46 x 56	317-KAPH-46x56	102,00
50W/75□/0.8A	38 ø	317-KAPH-38	90,00
230W/275□/0.9A	66 ø	317-KAPH-66	128,00



316-CBEAD-1.5

### Specification Miniature Heater

Temperature	-40°C ... 500°C
Material	Al <sub>2</sub> O <sub>3</sub> , Pt, Glass
Size	1.9 x 9.5 mm
Thickness	< 0.2 mm (contact area ~ 0.4 mm)
Connections	0.1 mm Pt-Wire ~3.5 mm long
High current	up to 2 A
Voltage	13.5 V
Resistivity	6.8 Ohm

### Miniature Heater UHV

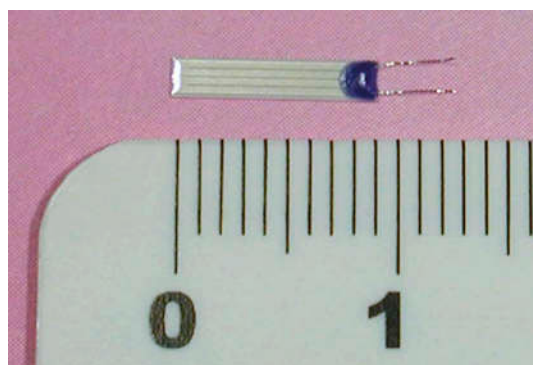
POWER	SIZE	PART NUMBER	EURO
27W	9.5 x 2.0	343-HEATER-2x10	55,00

### Ceramic Beads Pack for 250 mm Wire length

ID	OD	PART NUMBER	EURO
1.5 mm	4 mm	316-CBEAD-1.5	25,00
2.5 mm	5 mm	316-CBEAD-2.5	26,00
2.7 mm	6 mm	316-CBEAD-2.7	27,00

### SS Cable Ties 316 SS, Pack of 5

LENGTH	MAX ø	PART NUMBER	EURO
150 mm	40 mm	316-TIE150	13,00
200 mm	55 mm	316-TIE200	15,00
360 mm	105 mm	316-TIE360	21,00



343-HEATER-2x10

**UHV Solder, PEEK material, ceramic tubes**

- Here you can find a Selection of In-Vacuum Accessories:
- UHV Solder (High Temperature and Lead Free version)
  - PEEK raw Material in various shapes
  - Ceramic Tubes for cable insulation with 1, 2 and 4 holes
  - Coloured Glass Beads for Cable marking
  - Material of ceramic tubes: Al<sub>2</sub>O<sub>3</sub>

**Specification UHV Solder**

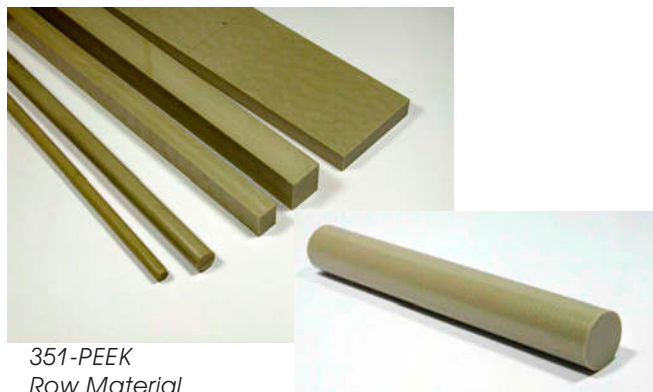
	315-SOLDER	315-LF-Solder
Melting point	300°C	225°C
Vapour press. (250°C)	<1.5 10 <sup>-11</sup>	<10 <sup>-12</sup> mbar
Material	Pb/Ag	Sn/Cu/Ag
RoHS conformity	Yes	Yes



315-LF-SOLDER  
 It includes flux  
 (~10m)

**Specification PEEK Raw Material**

Vacuum	UHV
Temperature	bakeable to 250°C
The material is brittle and should be used with care. Allectra is pleased to quote for machined PEEK parts.	

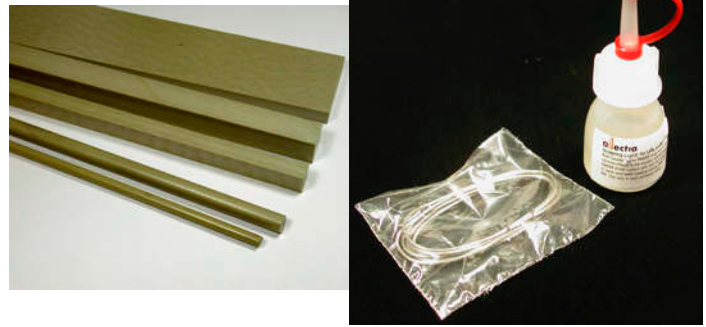


351-PEEK  
 Raw Material

351-PEEK-20D



Various ceramic tubes



**UHV Solder  
 High Temperature Type to 300°C**

TYPE	LENGTH	PART NUMBER	EURO
LEADED	0.5 m	315-SOLDER	35,00
LEADED	1.0 m	315-SOLDER-1M	65,00

**UHV Solder  
 Lead Free type to 225°C**

TYPE	LENGTH	PART NUMBER	EURO
NO LEAD	0.5 m	315-LF-SOLDER	32,00
NO LEAD	1.0 m	315-LF-SOLDER-1M	58,00

**PEEK Raw Material Rods - 250 mm long  
 Circular(C) or Rectangular(R) Section**

SECTION	SIZE	PART NUMBER	EURO
C	Ø 6 mm	351-PEEK-6D	13,00
C	Ø 10 mm	351-PEEK-10D	28,00
C	Ø 16 mm	351-PEEK-16D	57,00
C	Ø 20 mm	351-PEEK-20D	70,00
R	6 x 15 mm	351-PEEK-6X15	54,00
R	10 x 14 mm	351-PEEK-10X14	78,00
R	10 x 50 mm	351-PEEK-10X50	130,00

**Ceramic Tubes, 300mm Length**

TYPE	OD / ID	PART NUMBER	EURO
1 hole	2.0 / 1.0	358-TUBE-20	15,00
2 holes	2.1 / 2 x 0.8	358-TUBE-21-2	31,00
4 holes	2.6 / 4 x 0.6	358-TUBE-26-4	36,00
	---	358-TUBE-CUT	4,00

**Coloured Marker Beads  
 6 different colours**

ID / OD	Pack off	PART NUMBER	EURO
1mm/ 2mm	300	316-COLBEADS	98,00
0.6mm/ 2.4mm	500	316-COLBEADS-06	45,00
0.6mm/ 2.4mm	2000	316-COLBEADS-06-2000	148,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
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## UHV Shrink Hose, Kapton Tubes Viton- and PTFE Hoses

Shrink Hose based on PTFE can be used as a problem solver for many applications in UHV.

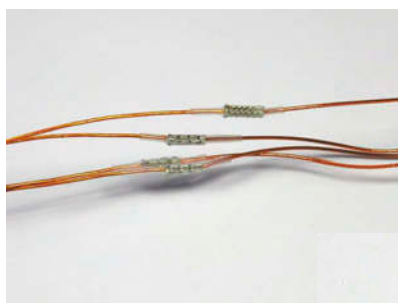
Kapton Tube allows easy insulation of bare wires and thermocouples.

Viton and PTFE Hose is offered in various sizes per meter



### Specification for UHV Shrink Hose

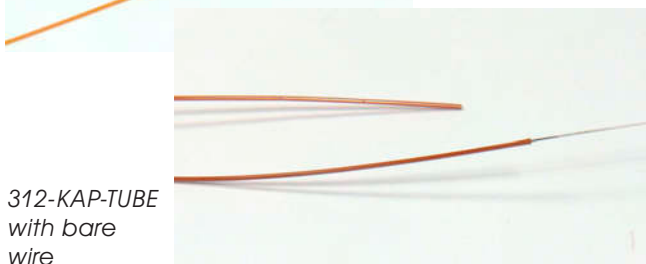
Vacuum	UHV
Temperature	Shrink: >350°C UHV use up to 260°C
Shrink rate	4 : 1



316-SHRINK-Applications



312-KAP-TUBE



312-KAP-TUBE with bare wire

### Specification KAPTON® Tubes

Temperature	-270 ... 260°C
Material	Kapton®, extruded quality
Thickness	0.3 ... 0.8mm: 25µm 1.0 ... 1.4mm: 50µm

### UHV compatible Shrink Hose 500mm per Pack

TYPE	MAX ID	PART NUMBER	EURO
PTFE	2.0 mm	316-SHRINK-20	15,00
PTFE	3.2 mm	316-SHRINK-32	20,00
PTFE	6.3 mm	316-SHRINK-63	26,00
PTFE	9.5 mm	316-SHRINK-95	32,00
PTFE	14 mm	316-SHRINK-140	35,00

### Kapton® Tubes, 300 mm long extruded

TYPE	MAX ID	PART NUMBER	EURO
KAPTON	0.32 mm	312-KAP-TUBE-03-300	21,00
KAPTON	0.51 mm	312-KAP-TUBE-05-300	23,00
KAPTON	0.64 mm	312-KAP-TUBE-06-300	24,00
KAPTON	0.72 mm	312-KAP-TUBE-07-300	25,00
KAPTON	0.81 mm	312-KAP-TUBE-08-300	26,00
KAPTON	1.0 mm	312-KAP-TUBE-10-300	26,00
KAPTON	1.4 mm	312-KAP-TUBE-14-300	29,00

### PTFE Tubes extruded, per Metre

TYPE	ID/ OD	PART NUMBER	EURO
PTFE	2/4 mm	370-PTFE-TUBE2	16,00
PTFE	3/5 mm	370-PTFE-TUBE3	19,00
PTFE	4/6 mm	370-PTFE-TUBE4	25,00
PTFE	10/12 mm	370-PTFE-TUBE10	31,00
PTFE	12/14 mm	370-PTFE-TUBE12	36,00

### VITON® Tubes extruded, per Metre

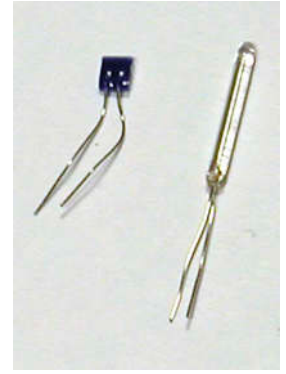
TYPE	ID/ OD	PART NUMBER	EURO
VITON	1/3 mm	370-VIT-TUBE1	21,00
VITON	2/4 mm	370-VIT-TUBE2	23,00
VITON	3/5 mm	370-VIT-TUBE3	24,00
VITON	4/6 mm	370-VIT-TUBE4	29,00
VITON	5/7 mm	370-VIT-TUBE5	35,00
VITON	6/9 mm	370-VIT-TUBE6	42,00
VITON	10/13 mm	370-VIT-TUBE10	59,00

## Pt Resistance Thermometers, Kapton Foil and Cable Crimp tubes

For accurate temperature measurement, PT100 resistors are offered. They are available without wires and optionally with pre-fitted Kapton wires for 4-wire connection.

Kapton Foil can be cut to size with scissors. Two thicknesses are offered.

Crimp Tubes can be used to combine cables without using solder.



Left: 342-PT100-C2  
 Right: 343-PT100-1.3-B

### Specification for PT100 Glass Thermometer

Vacuum	UHV 10 <sup>-10</sup> mbar
Temperature	-200 °C ... 450°C
Accuracy	Class B (0.3 + 0.005*T)
Dimension	1.3mm Ø x 10mm
Wire lengths	~10mm

### Platinum Resistance Thermometer GLASS Tube with or without 4x1m KAPM-025 wires

TYPE	SIZE	PART NUMBER	EURO
NO WIRES	1.3 x 10	343-PT100-1.3-B	74,00
WIRES	1.3 x 10	343-PT100-1.3-B-1M	179,00



### Specification for PT100 Ceramic Thermometer

Vacuum	UHV 10 <sup>-10</sup> mbar
Temperature	-70 °C ... 500°C
Accuracy	Class 1/3 B (0.1 + 0.0017*T)
Dimension	2.3mm x 2.1mm x ~0.5mm
Wire lengths	~10mm

### Platinum Resistance Thermometers CERAMIC Plate with or without 4x1m KAPM-025 wires

TYPE	SIZE	PART NUMBER	EURO
NO WIRES	2.3 x 2.1	343-PT100-C2	32,00
WIRES	2.3 x 2.1	343-PT100-C2-1M	137,00



### Specification for Kapton Foil

Vacuum	UHV
Temperature	-270 ... 260°C
Material	Kapton®
Size	~200 x 300mm sheet
Thickness	25µm / 50µm / 75µm / 125µm
Voltage rating	2KV / 4KV / 6KV / 10KV in vacuum

### Kapton Foil 200 x 300 mm sheet

VOLTAGE	THICKNESS	PART NUMBER	EURO
2KV	25µ	312-KAPF-25-M	48,00
4KV	50µ	312-KAPF-50-M	71,00
6KV	75µ	312-KAPF-75-M	93,00
10KV	125µ	312-KAPF-125-M	124,00



Various sizes of crimp tubes. Use 214-CTOOL for crimping.

### Crimp Tubes, Tin plated Copper 10 Pieces per pack

ID	OD / LENGTH	PART NUMBER	EURO
1,0mm	1,4 / 6 mm	360-CRTUBE-10	3,00
1,2mm	1,6 / 6 mm	360-CRTUBE-12	3,00
1,4mm	1,8 / 6 mm	360-CRTUBE-14	3,00
1,7mm	2,0 / 7 mm	360-CRTUBE-17	3,50
2,2mm	2,6 / 7 mm	360-CRTUBE-22	4,00
2,8mm	3,2 / 9 mm	360-CRTUBE-28	4,00
3,5mm	4,0 / 10 mm	360-CRTUBE-35	4,50
4,5mm	5,0 / 12 mm	360-CRTUBE-45	4,50
5,9mm	6,4 / 16 mm	360-CRTUBE-59	6,00

1 Sub-D  
 2 CM + DIL F/T  
 3 Coax F/T  
 4 Power High Voltage  
 5 Thermo-couple  
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## Crimp tool overview

Here an overview of CRIMP PINS supplied by Allectra and the recommended CRIMP TOOLS.  
The tools 321-CTOOL-SMA and CTOOL-SMA-BNC use the same basic tool with different crimp inserts.  
Crimp results depend also on the used cable diameter.  
In some cases, the locators must be removed.

Pin Type	Pin Type 2	214-CTOOL	214-CTOOL-SUB-D *)	214-CTOOL-HQ *)	214-CTOOL-TC	214-CTOOL-TC-HQ *)	214-CTOOL-TP *)	214-CTOOL-SMA	214-CTOOL-SMA-BNC	214-CTOOL-RING	Remarks
212-PINF	212-PINF-B	X	X	XX	(X)	(X)		(X)			Cable 0,25 - 1mm
212-PINF-S			X	XX	(X)	(X)		(X)			Cable 0,1 to 0,6mm
212-PINM		X	X	XX	(X)	(X)		(X)			Cable 0,25 - 1mm
212-PINM-S			X	XX	(X)	(X)		(X)			Cable 0,1 - 0,6mm
213-PINF-K/J...	213-PINM-K/J...				X	XX					
212-PINF-NH		X	X	XX	(X)	(X)		(X)			
212-PINF-HD		X	X	X		(X)		(X)			
212-POWER-F	212-POWER-M								X		for 311-KAPM-200
220-CM-PINF		(X)	X	XX	(X)	(X)					
220-CM-PINF-S		(X)	X	XX	(X)	(X)					
245-CON-SMA	245-CON-SMA-CER							X	XX		
245-CON-SMA-S									X		
245-CON-SMA-F	245-CON-SMA-90							X	X		
245-CON-BNC								X			
245-CON-BNC-S									X		for 311-KAP50-S
245-CON-MIC								X			
245-CON-SMB									X		
245-CON-N									X		
360-CRF-05		(X)	X	X				(X)			
360-CRF-07		X	X	X				(X)			
360-CRM-07		X	X	X				(X)			
360-CRIMP-1.3		X		X			X				
360-CRIMP-1.3-M		X		X			X				
360-CRIMP-2.4		(X)					X				
360-CRIMP-2.4-M		(X)					X				
360-TCRIMP-x		X		X			X				
360-CRBC-0.8		(X)		X			X				
360-CRBC-1.3		(X)		X			X				
360-CRBC-1.6		(X)		X			X				
360-LUG-xxx										XX	
360-RING-xxx										XX	

\*) : Crimp tool with Locator

XX: Best

X: Good

(X): Possible in some cases

Tools

The full range of Allectra Crimp tools are listed here.  
 In addition Wire Strippers for Kapton Wires are listed here.



**214-CTOOL**  
 Standard tool for Sub-D Pins.(212-PINF & 212-PINM)  
 Four brackets type.  
 No positioner.



**214-CTOOL-SUB-D**  
 Low cost four-indent crimp tool  
 with positioner.  
 Good for wires of 0.6mm to 1mm



**214-CTOOL-HQ**  
 High Quality four-indent crimp tool  
 with positioner  
 Depths of crimp can be adjusted.  
 Also used for "Small" crimps with  
 thick wall.



**214-CTOOL-TC**  
 Simple tool for thermocouple and  
 other stamped pins.



**214-CTOOL-TC-HQ**  
 High quality Crimp Tool for T/C and  
 other stamped pins. Includes  
 positioner, easy and reliable crimp  
 action.



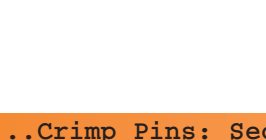
**321-CTOOL-TP**  
 Similar to 214-CTOOL-SUB-D but for  
 bigger pins up to 4.8 mm outer  
 diameter.  
 With positioner.



**321-CTOOL-SMA**  
 Tool with exchangeable inserts.  
 Hex crimping. 6 positions including  
 the small sizes 1.07 and 0.72mm



**321-CTOOL-SMA-BNC**  
 Tool with insert for BNC(2.6mm),  
 3 positions



**321-CTOOL-RING**  
 Tool with insert for cable ending  
 connectors. 3 positions



**Crimp tools**

PART NUMBER	EURO
214-CTOOL	198,00
214-CTOOL-SUB-D	98,00
214-CTOOL-HQ	486,00
214-CTOOL-TC	29,00
214-CTOOL-TC-HQ	239,00
214-CTOOL-TP	105,00
214-CTOOL-SMA	217,00
214-CTOOL-SMA-BNC	219,00
214-CTOOL-RING	217,00

**Kapton Wire Strippers  
 Precision Stripper**

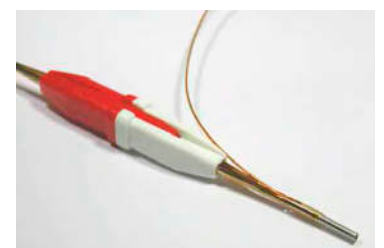
SIZE mm	SIZE AWG	PART NUMBER	EURO
0.12-0.4	36-26	321-STRIP04	59,00
0.3-1.0	28-18	321-STRIP10	59,00



321-STRIP-10

**Pin demounting Tool for Sub-D  
 ONLY FOR HV TYPES**

TYPE	No. PER PKT.	PART NUMBER	EURO
DEMOUNT	1	214-CRIMPINS	25,00



214-CRIMPINS with cable

- 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

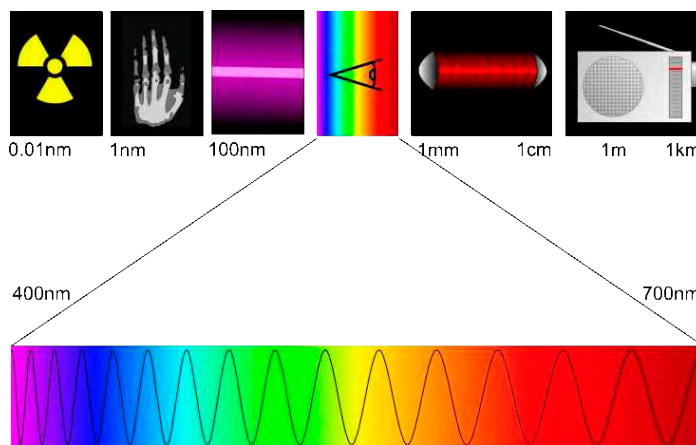
## Viewports

In this section hermetically sealed optical components are listed, which are typically used for visual or broad band energy transmission into and out of vacuum systems. The usable part of the spectra is defined by the optics material. For visible access, standard Boro-Silicate glass is used.

Quartz (or better Fused Silica) enlarges the transmission to the UV and near IR range. Fused Silica is synthetically made Quartz; this is a very pure material with minimal inclusions or bubbles. Various qualities are offered.

Other materials including Sapphire, Calcium-Fluoride and Magnesium-Fluoride are offered as well for special applications.

Single and Multi-layer coatings can be added to viewports to optimize transmission performance. All viewports are suitable for UHV or HV applications.



Spectra of electromagnetic rays. The visible range from about 400nm to 700nm is shown in detail.

Allectra offers materials from the X-Ray region to the infra-red (IR).

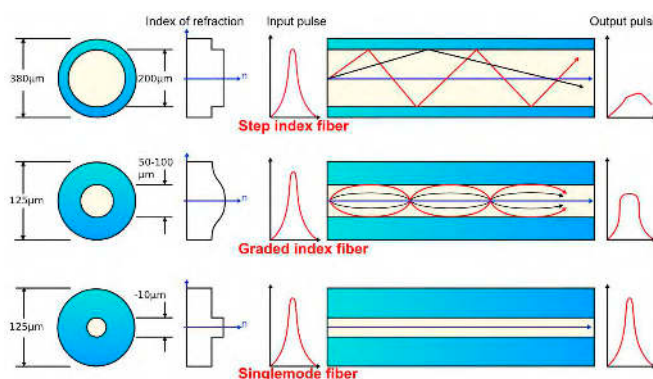
## Polishing Quality

The quality of polishing is normally given by two numbers called scratch-dig. The first one refers to the max. width of a scratch in  $\mu\text{m}$ , the second gives the diameter of digs or bubble defects in  $10\mu\text{m}$ .

So a typical polish of 40-20 refers to a maximum scratch width of 0.04mm and a maximum dig diameter of 0.2mm. Two digs must be separated by minimum 20mm from each other

## Fibreoptic

For an increasing number of applications, Optical Fibres are used in vacuum either to get signals out or to bring "light" to the right point into the chamber. A variety of feedthrough types as well as fibres enable the right component to be found.



The 3 different types of Optical Fibres:

The Step Index Fibres are the thickest Fibres used. They are used for illumination or heat transfer by light and applications such as Spectroscopy. These Fibres have an Outside Diameter of 400 or 600 microns.

The Graded Index Fibres are typically data fibers. They have the advantage that the signal is kept sharper.

The best signal fibers are the Single Mode types. By having a very small diameter (6-9µm), which is much smaller than the wavelength of the light, there is only one optical path available and the signal keeps its shape.

Both Graded Index and Single Mode have an Outside Diameter of 125 microns.

Allectra offers Feedthroughs and components with all three types.

- 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



## Viewports and Fibre Optics for HV and UHV



### 7.1 STANDARD SERIES GLASS VIEWPORTS

-> Page 7.3

Standard Glass Viewports for UHV and HV  
 Standard Glass Viewports, O-Ring Sealed ISO-K types  
 Standard Glass Viewports with Broad Band Anti-Reflective coating



### 7.2 SAPPHIRE VIEWPORTS

-> Page 7.4

- UV GRADE Sapphire Viewports
- DUV GRADE Sapphire Viewports
- REGULAR GRADE Sapphire Viewports
- Large versions up to 137mm View Diameter
- High Vacuum Versions



### 7.3 FUSED SILICA (QUARTZ) VIEWPORTS

-> Page 7.5

Fused Silica Viewports UV grade  
 Fused Silica Viewports DUV grade  
 Fused Silica Viewports EXCIMER grade



### 7.4 BBAR COATED VIEWPORTS

-> Page 7.7

Broad Band Anti-Reflection coated Quartz  
 DUV Base material  
 40CF and 63CF sizes



### 7.5 LASER VIEWPORTS

-> Page 7.8

Laser Viewports with AR coating  
 40CF and 63CF sizes



### 7.6 NON-MAGNETIC AND CRYSTAL QUARTZ

-> Page 7.9

Non-magnetic Fused Silica Viewports  
 UV and DUV Quality  
 Crystal Quartz Viewports

### 7.7 SPECIAL MATERIALS VIEWPORTS

-> Page 7.10

Calcium-Fluoride/ Magnesium Fluoride/ Zinc Selenide  
 BBAR Coated Zinc Selenide

### 7.7 SPECIAL PURPOSE VIEWPORTS

-> Page 7.11

Re-Entrant Windows  
 Differentially pumped Geo-Chronology Zinc Selenide  
 X-Ray Beryllium Viewports

### 7.8 VIEWPORT ACCESSORIES

-> Page 7.12

Viewport Shutter  
 Lead Glass Radiation Protection Screen  
 External Viewport Door for Radiation Protection

### 7.9 FIBRE OPTICS (SUBSECTION)

-> Page 7.13 - 7.17

High Vacuum Fibre Optic Feedthroughs O-Ring sealed  
 UHV Fibre Optic All Metal sealed Feedthroughs  
 Fibre Optic Cables for UHV and High Vacuum

## Standard Series Glass Viewports

Standard Glass Viewports are available on CF, KF and ISO-K Flanges. The glass material is Kodial (Boro-Silicate glass). These viewports are for normal visible light. For more demanding applications, Fused Silica (Quartz) is recommended.



### Specification Standard Series Viewports

Vacuum	UHV	
Material	Glass	Kodial
	Transition	Kovar
	Flange	SS grade 304
Bakeable	400°C (CF) / 150°C (KF)	
Max. Gradient	5°C/ min	
Transmission	ca. 300 - 2500 nm	
Annealed gaskets or Allectra W type gaskets should be used for CF types.		

### Metal sealed Glass Viewports UHV

FLANGE	VIEW DIAM.	PART NUMBER	EURO
16CF	16	120-VPG-C16	95,00
40CF	38	120-VPG-C40	84,00
63CF	63	120-VPG-C63	132,00
100CF	90	120-VPG-C100	268,00
160CF	135	120-VPG-C160	429,00
200CF	135	120-VPG-C200	POR

### Metal sealed Glass Viewports High Vacuum KF Types

FLANGE	VIEW DIAM.	PART NUMBER	EURO
16KF	16	120-VPG-K16	96,00
25KF	16	120-VPG-K25	98,00
40KF	32	120-VPG-K40	117,00
50KF	32	120-VPG-K50	134,00



Flanges made out of Glass or Quartz as well as glass components are offered by EVAC (Page 138). Please ask for a copy of the EVAC catalogue.

### Specification O-Ring Sealed ISO-K Viewports

Material	S/S holder
	Viton O-Ring
	Kodial glass

The O-Ring sealed viewports are an alternative to the metal sealed types. One O-Ring is used to seal the flange as well as the viewport. A significantly enlarged view diameter is obtained.

### O-Ring sealed Glass Viewports ISO-K Types

FLANGE	VIEW DIAM.	PART NUMBER	EURO
63 ISO	72	120-VPGO-ISO63	150,00
100 ISO	104	120-VPGO-ISO100	228,00
160 ISO	152	120-VPGO-ISO160	385,00
200 ISO	210	120-VPGO-ISO200	689,00

### Specification Anti-Reflective (BBAR) coating

Vacuum	UHV
Temperature	400°C
Coating	multi-layer coating
Transmission	typ. >99.5% in the visible range
Surface quality	60/40 scratch/dig

### Standard Series Glass Viewports with Broad Band Anti-Reflective coating

FLANGE	VIEW DIAM.	PART NUMBER	EURO
16CF	16	120-VPG-C16-BBAR	POR
40CF	38	120-VPG-C40-BBAR	POR
63CF	63	120-VPG-C63-BBAR	POR

## Sapphire Viewports

Sapphire has high transmission over wavelengths from 180nm up to 5500nm. It is a very rigid material with high bakeout temperatures. This makes Sapphire an ideal material for a lot of demanding applications.

- Three qualities are available: Regular Grade, UV and DUV
- Sizes up to 136mm View Ø
- Broad band or single band Coated versions available on request



### General Specification UHV Sapphire Viewports

Vacuum	UHV
Material	Sapphire,
	90° Orientation
Bakeable	400°C (CF Flange)
Max. Gradient	5°C/min
These Viewports should be installed with annealed copper gaskets.	

### Specification UV Grade Sapphire Viewports

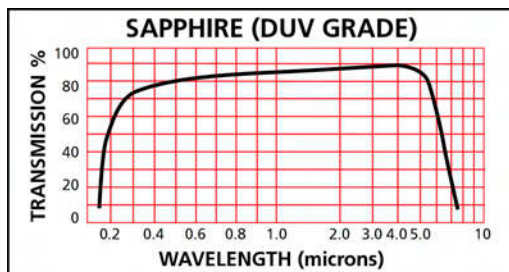
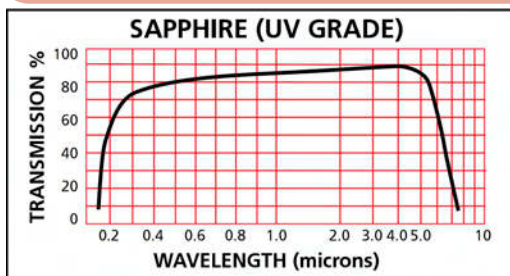
Parallelism	< 3 arc min
Surface finish	50-20 Scratch-Dig
Transmission	~ 180 – 5500nm >50% at 250nm

### Specification DUV Grade Sapphire Viewports

Parallelism	< 3 arc min
Surface finish	20-10 Scratch-Dig
Transmission	~ 180 – 5500nm >70% at 250nm

### Specification Regular Grade Sapphire Viewports

Parallelism	not specified
Surface finish	60-40 Scratch-Dig
Transmission	~ 250 – 5500nm



### UV GRADE Sapphire Viewports UHV - no coating

**REDUCED**

FLANGE	VIEW Ø	THICKN.	PART NUMBER	EURO
16CF	15	1.6	130-VPS-C16-15	200,00
40CF	24	2.0	130-VPS-C40-24	255,00
40CF	36	2.0	130-VPS-C40-36	600,00
63CF	49	2.4	130-VPS-C63-49	700,00

Note: also available on KF flanges or as weld adaptors

### DUV GRADE Sapphire Viewports UHV - no coating

**REDUCED**

FLANGE	VIEW Ø	THICKN.	PART NUMBER	EURO
40CF	17.5	2.0	130-VPSDUV-C40-17	295,00
40CF	23.8	2.0	130-VPSDUV-C40-24	335,00
63CF	36	2.0	130-VPSDUV-C63-36	810,00
63CF	49	2.4	130-VPSDUV-C63-49	975,00

Note: also available as weld adaptors

### Regular Grade Sapphire Viewports UHV - no coating

FLANGE	VIEW Ø	THICKN.	PART NUMBER	EURO
16CF	16	1.5	131-VPS-C16-16	380,00
40CF	32	1.5	131-VPS-C40-32	466,00
40CF	38	1.5	131-VPS-C40-40	605,00
63CF	63	2.0	131-VPS-C63-63	1023,00
100CF	89	3.0	131-VPS-C100-89	POR
160CF	136	4.0	131-VPS-C160-136	POR

non-magnetic versions are available on request

### Regular Grade Sapphire Viewports HIGH VACUUM - no coating

FLANGE	VIEW Ø	THICKN.	PART NUMBER	EURO
25 KF	20	1.5	131-VPS-K25-20	POR
40 KF	38	1.5	131-VPS-K40-38	POR
50 KF	38	1.5	131-VPS-K50-38	POR
100 ISO-K	63	2.0	131-VPS-ISO100-63	POR

Note: also available with BBAR or VAR coating

- 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

## Fused Silica (Quartz) Viewports

Fused Silica is an isotropic material with no crystal orientation. It has an almost flat transmission curve from UV to near IR with more than 90% transmission in the visible range.

Three qualities are offered:

- UV grade - 200nm to 2 $\mu$ m
- DUV grade - 200nm to 2 $\mu$ m- high purity
- EXCIMER grade 185nm to 2.2 $\mu$ m



### General Specification Fused Silica Viewports

Vacuum	UHV
Leak rate	<2x 10 <sup>-10</sup> mbar l /s
Temperature	-100 ... 200°C
Gradient	<5K/min
Transmission	>90% in visible range

### Specification UV Grade Fused Silica

Parallelism	<30 arc sec
Surface Finish	40-20 scratch/dig
Transmission	>90% @ 250nm
Usable range	200 ... 2000nm
Inclusions	max. 0.25mm <sup>2</sup> /100cm <sup>3</sup> (class 2)
Isotropy	2D Material
Homogeneity	Grade F

### Specification DUV Grade Fused Silica

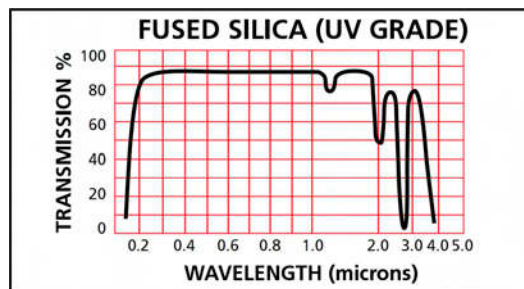
Parallelism	<10 arc sec
Surface Finish	20-10 scratch/dig
Flatness	$\lambda/4$ @ 632nm
Transmission	>99,8% @ 248nm (internal)
Usable range	200 ... 2000nm
Inclusions	max. 0.03mm <sup>2</sup> /100cm <sup>3</sup> (class 0)
Isotropy	3D Material
Homogeneity	Grade A

Fused Silica (Quartz) Thickness:			
16CF	2.5mm	40CF	3.3mm
63CF	6.4mm	100CF	6.4mm
160CF	9.4mm	200CF	6.4mm

### Fused Silica (Quartz) Viewports UV grade UHV 0.2 to 2 microns - NO coating

REDUCED

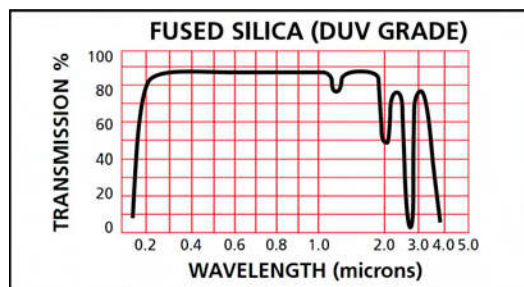
FLANGE	VIEW DIAM.	PART NUMBER	EURO
16CF	16	110-VPQZ-C16-UV	180,00
40CF	35	110-VPQZ-C40-UV	200,00
63CF	68	110-VPQZ-C63-UV	650,00
100CF	98	110-VPQZ-C100-UV	800,00
160CF	137	110-VPQZ-C160-UV	1950,00
200CF	198	110-VPQZ-C200-UV	2500,00



### Fused Silica (Quartz) Viewports DUV grade UHV 0.2 to 2 microns - NO coating

REDUCED

FLANGE	VIEW DIAM.	PART NUMBER	EURO
16CF	16	110-VPQZ-C16-DUV	305,00
40CF	35	110-VPQZ-C40-DUV	350,00
63CF	68	110-VPQZ-C63-DUV	950,00
100CF	98	110-VPQZ-C100-DUV	1350,00
160CF	137	110-VPQZ-C160-DUV	POR
200CF	198	110-VPQZ-C200-DUV	POR



Coated Quartz Viewports are available: See pages 7.7 and 7.8 for details of broad band coatings and single line coatings for laser applications.

- 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

## Excimer Grade Quartz Viewports

Designed for use with ArF based Excimer lasers (193nm) a high quality Fused Silica (Quartz) material is offered, which gives an internal transmission at this wavelength of more than 99.5%. These windows can also be used for other demanding applications in the UV region.



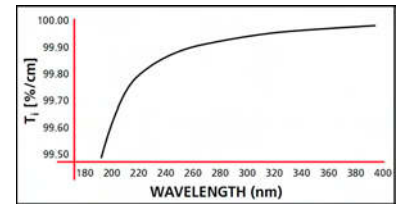
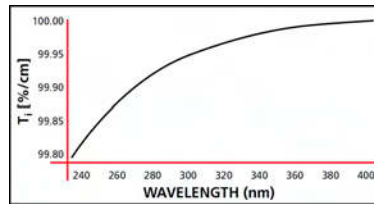
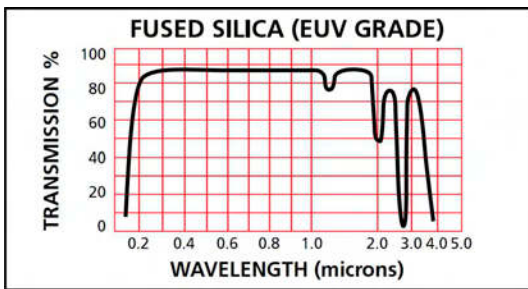
### Specification EXCIMER (EUV) GRADE Fused Silica

Parallelism	<10 arc sec.
Surface Finish	20-10 scratch/dig
Flatness	$\lambda/4$ @ 632nm
Transmission	>99.5% @ 193nm (internal)
Usable range	180 ... 2000nm
Inclusions	max. 0.03mm <sup>2</sup> /100cm <sup>3</sup> (class 0)
Isotropy	3D Material
Homogeneity	Grade A

### Fused Silica Viewports - EXCIMER grade UHV 0.18 to 2 microns - NO coating

**REDUCED**

FLANGE	VIEW DIAM.	PART NUMBER	EURO
40CF	35	110-VPQZ-C40-EX	650,00
63CF	68	110-VPQZ-C63-EX	1450,00



Internal transmission curves for DUV and Excimer grade material.

## Fused Silica (Quartz) Viewports on KF Flanges

The UV-Quartz quality is offered for use with KF flanges. Other Fused Silica grades are available on request. Please ask the Sales Office for a quote.



### Specification for Quartz KF-Viewports

Vacuum	10 <sup>-9</sup> mbar
Temperature	-100 to 200°C <5K/min
Transmission	200 ... 20000nm
Inclusions	max 0.25mm <sup>2</sup> /100cm <sup>3</sup>
Isotropy	2D Material

### Fused Silica Viewports Versions on KF Flanges

**REDUCED**

FLANGE	VIEW DIAM.	PART NUMBER	EURO
25KF	16	110-VPQZ-K25	205,00
40KF	35	110-VPQZ-K40	205,00
50KF	35	110-VPQZ-K50	250,00

Weldable versions are available as well in all three different qualities! Please ask for a quote

- 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

# 7.7 COATED QUARTZ VIEWPORTS

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## Fused Silica (Quartz) Viewports with BBAR coating

Three types of broad band anti-reflection coatings are offered as standard for 40CF and 63CF Flanges:

- UV Coating 225nm to 450nm
- Visible Spectra Coating 425 to 760nm
- Near IR Coating 550 to 1100nm



### Specification BBAR Coated Fused Silica

Vacuum	UHV
Leak rate	<2x 10 <sup>-10</sup> mbar l /s
Temperature	-100 ... 200°C
Gradient	<5K/min
Reflectance	see graphs, max. 2% in given range
Parallelism	<10 arc sec.
Surface Finish	20-10 scratch/dig
Flatness	λ/4 at 632nm
Inclusions	max. 0.03mm <sup>2</sup> /100cm <sup>3</sup> (class 0)
Isotropy	3D Material
Homogeneity	Grade A

### Fused Silica (Quartz) Viewports with BBAR coating UV Range 225 - 450nm

REDUCED

FLANGE	View ø	PART NUMBER	EURO
40CF	35 mm	110-QZ-UV-C40	695,00
63CF	68 mm	110-QZ-UV-C63	1245,00

### Fused Silica (Quartz) Viewports with BBAR coating Visible Range 425 - 760nm

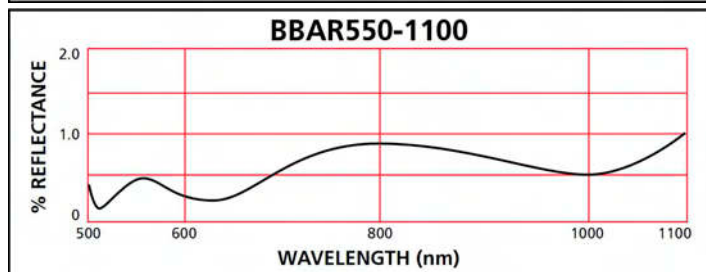
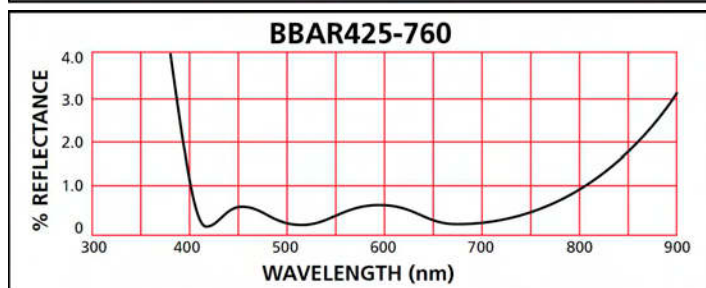
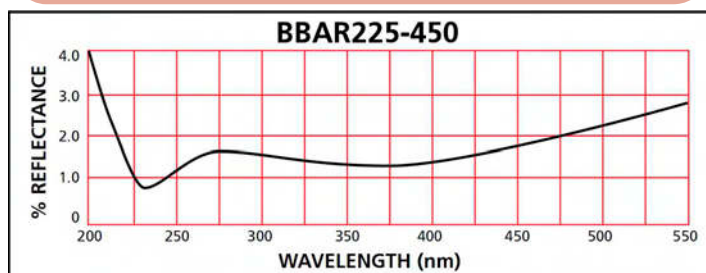
REDUCED

FLANGE	View ø	PART NUMBER	EURO
40CF	35 mm	110-QZ-VIS-C40	695,00
63CF	68 mm	110-QZ-VIS-C63	1245,00

### Fused Silica (Quartz) Viewports with BBAR coating IR Range 550 - 1100 nm

REDUCED

FLANGE	View ø	PART NUMBER	EURO
40CF	35 mm	110-QZ-IR-C40	695,00
63CF	68 mm	110-QZ-IR-C63	1245,00



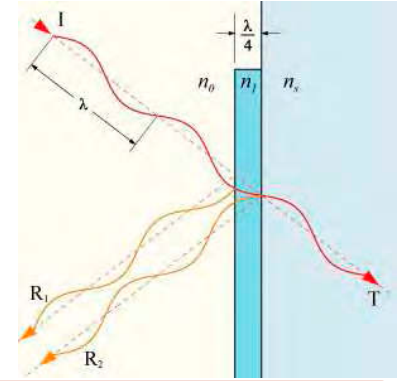
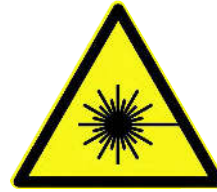
Reflectance versus wavelength for the 3 different types of standard broad band coating.

- Top: UV-range
- Middle: Visible range
- Bottom: IR range

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

## Laser Viewports with AR coating

For Laser applications Allectra offers high quality Quartz viewports with optimized coatings. All viewports have more than 99.5% transmission / surface at the given wavelength. A high quality 20/10 surface finish and a flatness of  $\lambda / 4$  allow high performance. They are offered on DN40CF flanges with 35mm view diameter and on DN63CF with 68mm view diameter.



### Specification for UHV Laser Viewports

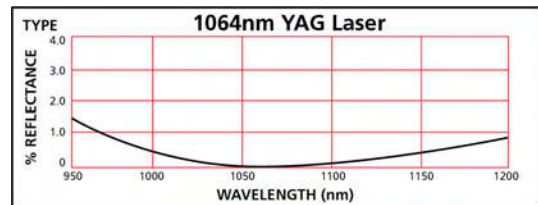
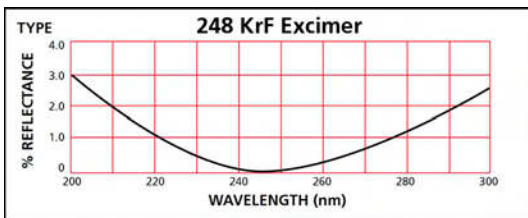
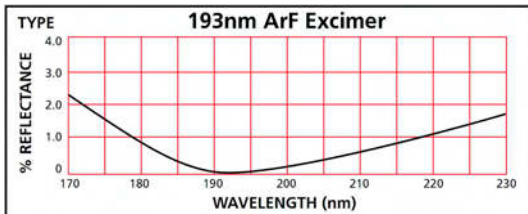
Vacuum	UHV
Temperature	-100 to 200°C
Parallelism	<10 arc sec
Flatness	$\lambda/4$ @ 632nm
Surface finish	20/10 Scratch/Dig
Homogeneity	Grade A
Inclusion class	0
Coating	V-Coat with <0.25% Reflection/surf.
Material	
ArF (193nm)	Excimer Grade
KrF (248nm)	DUV Grade
Diode (780nm)	UV Grade
YAG (1064nm)	IR Grade
Laser Damage Threshold	
ArF	1 J/cm <sup>2</sup> for 10ns Pulse
KrF	10 J/cm <sup>2</sup> for 10ns Pulse
Diode	10 J/cm <sup>2</sup> for 10ns Pulse
YAG	10 J/cm <sup>2</sup> for 10ns Pulse

### Laser Viewports with AR coating 40CF and 63CF flanges

**REDUCED**

FLANGE	WAVELENGTH	PART NUMBER	EURO
40CF	193 nm	110-ARF-C40	795,00
63CF	193 nm	110-ARF-C63	1345,00
40CF	248 nm	110-KRF-C40	695,00
63CF	248 nm	110-KRF-C63	1245,00
40CF	780 nm	110-DIODE-C40	695,00
63CF	780 nm	110-DIODE-C63	1245,00
40CF	1064 nm	110-YAG-C40	695,00
63CF	1064 nm	110-YAG-C63	1245,00

Coatings for other wave lengths are possible. Please ask for a quote!  
 Also V-coats for 2 different wave lengths are available.



Reflectance versus wavelength for the different coatings:

- Top left: for ArF Excimer Laser
- Bottom left: for KrF Excimer Laser
- Top right: for 780nm Diode Laser
- Bottom right: For YAG Laser

- 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

# 7.9 NON-MAGNETIC VIEWPORTS

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## Non-magnetic Fused Silica Viewports

Standard Fused Silica viewports have very low magnetic permeability, as no Kovar or other magnetic materials are used. For very demanding applications, Allectra offers UV and DUV viewports with Titanium sleeves, mounted in 316LN Flanges. The sizes 16CF and 40CF are offered as standard.



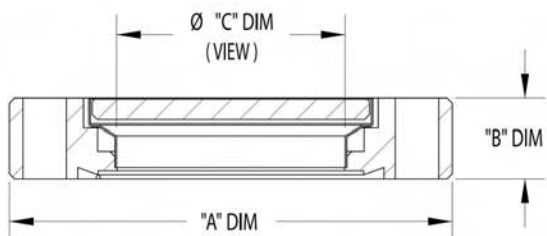
### Specification Non-Magnetic Fused Silica

Vacuum	UHV, $10^{-10}$ mbar
Temperature	-100 to 200°C
Material	Flange 316LN SS Sleeve Titanium Window Fused Silica, UV / DUV
For UV/DUV specification see page 7.5	

### Non-Magnetic Fused Silica Viewports UV and DUV Quality

REDUCED

FLANGE	TYPE	PART NUMBER	EURO
16CF	UV Grade	110-QZ-NM-C16-UV	480,00
40CF	UV Grade	110-QZ-NM-C40-UV	575,00
16CF	DUV Grade	110-QZ-NM-C16-DUV	590,00
40CF	DUV Grade	110-QZ-NM-C40-DUV	710,00

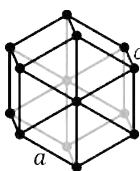


Viewport dimensions:

DN16CF: A= 34mm, B= 8.9mm, C= 16mm

DN40CF: A= 70mm, B=12.7mm, C= 35.5mm

## Crystal Quartz Viewports



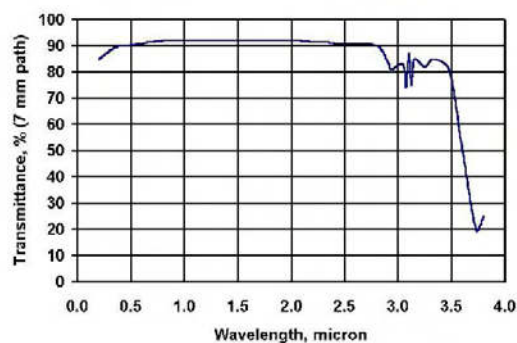
Optical Quality Crystalline Quartz features high transmittance in ultraviolet, visible and infrared spectrum from 190 to 2900 nm, birefringence, ability to rotate plane polarized light, high damage threshold and resistance to scratching. Optical quality material is virtually bubble and inclusion free, grade A.

### Crystal Quartz Viewports UHV

FLANGE	VIEW $\varnothing$	PART NUMBER	EURO
40CF	22.8mm	110-QZ-C40-CRYST	POR
63CF	48.2mm	110-QZ-C63-CRYST	POR
100CF	48.2mm	110-QZ-C100-CRYST	POR

### Specification Crystal Quartz

Vacuum	UHV, $10^{-10}$ mbar
Temperature	-100 to 200°C
Orientation	Z-Cut
Parallelism	<10 arc sec
Surface Finish	20/10 scratch/dig
Flatness	$\lambda/2 @ 632\text{nm}$



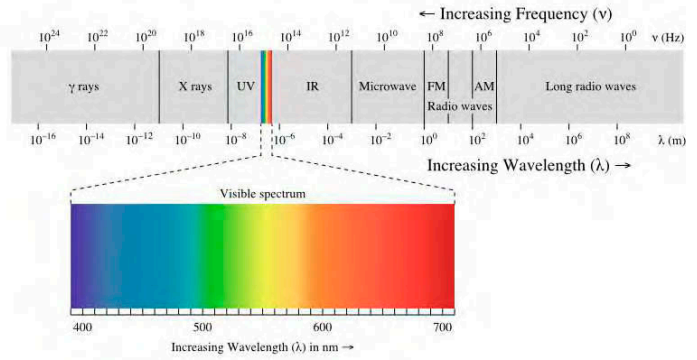
Transmission spectrum of Crystal Quartz

- 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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- 10 Process Control
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- 12 KF Hardware
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- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal



## Special Materials Viewports

UHV Viewports made of Special Materials are available when other wavelengths than standard glass or quartz are needed. Calcium-Fluoride and Magnesium-Fluoride cover a wide transmission range from UV to Infrared down to 20μm (see the transmission curves below). With the optional AR coating higher transmission can be reached.



### Specification Special Material Viewports

Vacuum	UHV, 10 <sup>-10</sup> mbar
Temperature	200°C (150°C for coated ZnSe)
Transmission:	
CaF2	150nm ... 9μm
MgF2	180nm ... 8μm
ZnSe	600nm ... 20μm
View Diameters	40CF: 23mm 63CF: 48mm
Flatness:	λ / 4
Surface finish	20/10 (CaF2 , MgF2) 40/20 (ZnSe)

### Special Materials Viewports - NO COATING UHV

**REDUCED**

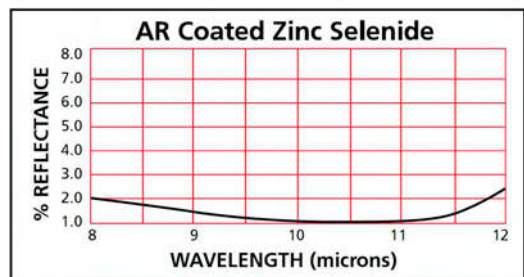
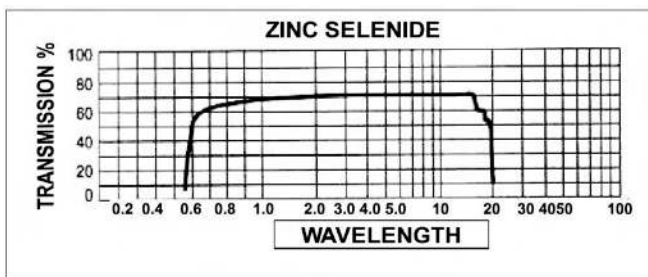
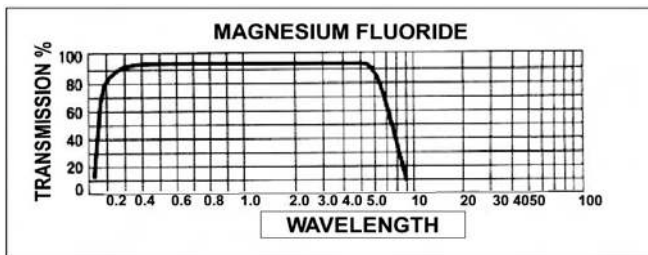
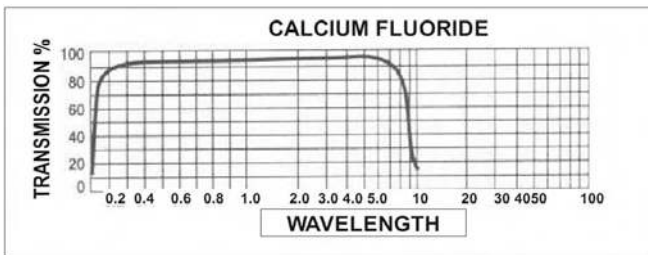
FLANGE	TYPE	PART NUMBER	EURO
40CF	CaF2	130-CAF-23-C40	595,00
63CF	CaF2	130-CAF-48-C63	POR
40CF	MgF2	130-MGF-23-C40	595,00
63CF	MgF2	130-MGF-48-C63	POR
40CF	ZnSe	130-ZNSE-23-C40	595,00
63CF	ZnSe	130-ZNSE-48-C63	POR

### Special Materials Viewports ZnSe - AR COATED UHV

**REDUCED**

FLANGE	TYPE	PART NUMBER	EURO
40CF	ZnSe	130-ZNSE-23-AR-C40	795,00
63CF	ZnSe	130-ZNSE-48-AR-C63	POR

The standard coating for ZnSe is a Broad Band AR ( for 8 - 12 μm); the reflection loss is <0.5% per surface. Please note that coated viewports are bakeable to 150°C only.



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

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## Special purpose Viewports: - Re-Entrant Windows

Re-Entrant Windows allow optical systems or cameras to be inserted "inside" the vacuum system.  
 Other tube lengths can be offered on request.



### Specification Re-Entrant Windows

Vacuum UHV, <math>10^{-10}</math> mbar  
 Temperature 200°C  
 Material Fused Silica UV or DUV grade  
 (see p. 82 for full spec)

Basic dimensions	63CF	100CF
View Diameter	35.5mm	68mm
In-Vacuum length	89mm	89mm
Tube ID	48mm	72mm
Tube OD	51mm	76.5mm

### Re-Entrant Windows 63CF / 100CF with Fused Silica

REDUCED

FLANGE	TYPE	PART NUMBER	EURO
63CF	UV	110-REQZ-C63-UV	700,00
100CF	UV	110-REQZ-C100-UV	1150,00
63CF	DUV	110-REQZ-C63-DUV	850,00
100CF	DUV	110-REQZ-C100-DUV	1450,00

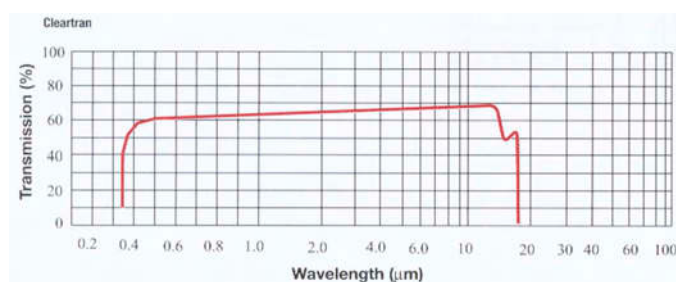
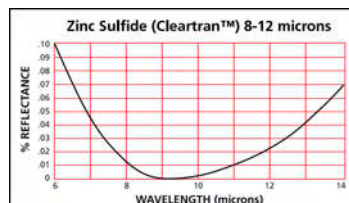
## Special purpose Viewports: - Differentially pumped XHV

These special windows are used typically for Geo-chronology measurements. Two UHV windows are sealed together and can be differentially pumped. Coated Cleartran gives good transmission from ~350nm to the far IR.



### Specification for Geo-Chronology Viewport

Vacuum XHV, <math>10^{-11}</math> mbar  
 (2 UHV sealed viewports, differentially pumped)  
 Temperature 200°C  
 Material Cleartran® (Zinc Sulfide), AR coated 8 - 12µm  
 Transmission 350nm - 15µm  
 View Diameter 40CF: 23.6mm  
 63CF: 48mm  
 Flatness  $\lambda / 4$   
 Surface finish 40/20



Please ask the sales office for a quote for these special components! Thank you

## Special Purpose Viewports: - Beryllium X-Ray Viewports

A Beryllium Viewport acts as a barrier between the vacuum or inert gas environment inside an X-ray source tube or detector and atmospheric conditions external to the device, while at the same time allowing X-rays to pass through. Standard size is 40CF with a thickness of 130µm and a view diameter of 39mm.



**Viewport Accessories**

Allectra offer Accessories for Viewports:

- Viewport Shutter
- Lead Glass Radiation Protection Screen
- External Viewport Door for Radiation Protection

**Specification for Viewport Shutter**

Vacuum	to 10 <sup>-10</sup> mbar
Construction	All Metal
Bakeable	to 250°C
Mechanism	Shutter plate with rotary drive Drive with position lock
Flange	Double sided with through holes



140-VPSH-ISO100F

**Specification Lead Glass Kit**

Thickness	5.6 mm
Lead Equivalent	1.6 mm (to 110kV) 1.4 mm (to 200kV)

The Lead Glass Screen is offered as a kit comprising the Lead Glass, a Retaining Ring and a Set of Long Bolts which hold the retaining ring onto the front of the viewport. The Viewport is not included.



140-LG-C63

**Specification External Viewport Door**

Use	External closure for Viewports for X-Ray or Laser light protection
Thickness	6mm SS door
Micro-Switch	included for Interlock Circuits

**Viewport Shutter  
UHV and High Vacuum**

FLANGE	TYPE	PART NUMBER	EURO
63CF	MANUAL	140-VPSH-C63	840,00
100CF	MANUAL	140-VPSH-C100	935,00
160CF	MANUAL	140-VPSH-C160	1267,00
63 ISO	MANUAL	140-VPSH-ISO63F	1058,00
100 ISO	MANUAL	140-VPSH-ISO100F	1176,00



140-VPSH-C100

**Lead Glass Radiation Protection Screen  
~1.5 mm lead equivalent**

FLANGE	TYPE	PART NUMBER	EURO
16CF	KIT	140-LG-C16	99,00
40CF	KIT	140-LG-C40	105,00
63CF	KIT	140-LG-C63	220,00
100CF	KIT	140-LG-C100	385,00
160CF	KIT	140-LG-C160	POR

**External Viewport Door for Radiation Protection  
with microswitch for interlock circuit**

FLANGE	TYPE	PART NUMBER	EURO
63CF	MANUAL	140-VPXD-C63	220,00
100CF	MANUAL	140-VPXD-C100	280,00
160CF	MANUAL	140-VPXD-C160	380,00

*The External Viewport Door fits over the profile of a CF flange using extra long bolts or studding (not included). The microswitch can be fitted into a Safety Interlock circuit so that the 6mm Stainless Steel door can only be opened when a Laser or other device is switched off. The External Viewport Door does not make a Vacuum Seal.*

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
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## Fibre Optics -Introduction

Four different types of Fibre Optic Feedthroughs are offered by Allectra:

### 1) High Vacuum Coupler Feedthrough

This type is sealed by an O-ring and is suitable down to  $10^{-8}$  mbar. The seal is made by the in-vacuum connector. The air side Fibre can be removed without breaking the vacuum. For air and vacuum, Fibres with an SMA-F connector are required.

-> Page 7.14



### 2) UHV Feedthrough with SMA Connectors on both sides- All-metal types

A short Fibre is sealed into the Flange with an all-metal seal. The Fibres are coupled in the usual way with Fibre Couplers on the air and vacuum sides. Fibres with 200 / 400 / 600 $\mu$ m core diameter are used; a UV and an IR version are available. A disadvantage is that two Fibre junctions are required

-> Page 7.15



### 3) UHV Feedthrough with attached In-Vacuum Fibre - All metal types

This type comes with the In-vacuum Fibre already attached to the flange. Only one coupling is required, which results in lower losses and a reduced overall system price. This system is offered with SMA connectors and 200 / 400 / 600 $\mu$ m Step Index Multimode Fibres.

UV and IR types are available.

-> Page 7.16



### 4) UHV Feedthrough with attached 125 $\mu$ m OD In-Vacuum Fibre and FC-PC connectors

With FC-PC connectors several types of Fibres can be offered:

- The typical 50 $\mu$ m core data fibre as a Multimode fibre
- Single mode fibre with 9 $\mu$ m core
- Single mode fibre with 6 $\mu$ m core

The FC connector on the air side allows the direct combination also with ST-Connectors by using an adapter coupler. So a special ST-type feedthrough is obsolete.

-> Page 7.17



### High Vacuum Fibre Optic Coupler Feedthrough

A low cost and simple solution for High Vacuum Fibre applications. Only one coupling is required to go into the vacuum system, the two F-SMA terminated Fibres are connected directly within the feedthrough and the seal is made with a Buna-N O Ring. Viton O-Ring option.  
 As fibres versions with 200 / 400 / 600µm core diameter are offered.



#### Specification Fibre Optic Coupler F/T

Vacuum	HV, down to 10 <sup>-8</sup> mbar
Temperature	-20°C to 150°C
Flanges	16KF, 25KF, 40KF and custom 16CF, 40CF and custom
Material	SS for F/T and coupler
O-Ring	Buna-N included, Viton optional

With the Coupler Feedthrough, a Buna-N O-ring is supplied as standard. A Viton O Ring is an option. Spare O-Rings are offered below.

152-FCF-K40



#### Fibre Optic Coupler Feedthroughs KF Flanges, O-Ring Sealed

REDUCED

FLANGE	No of F/T	PART NUMBER	EURO
16KF	1	152-FCF-K16	120,00
25KF	1	152-FCF-K25	120,00
40KF	1	152-FCF-K40	125,00
40KF	2	152-FCF-K40-2	235,00
40KF	3	152-FCF-K40-3	338,00
40KF	4	152-FCF-K40-4	425,00

#### Fibre Optic Coupler Feedthroughs CF Flanges, O-Ring Sealed

REDUCED

FLANGE	No of F/T	PART NUMBER	EURO
16CF	1	152-FCF-C16	130,00
40CF	1	152-FCF-C40	140,00
40CF	2	152-FCF-C40-2	250,00
40CF	3	152-FCF-C40-3	353,00
40CF	4	152-FCF-C40-4	440,00

#### Specification In-Vacuum Fibre for Coupler F/T

Vacuum	10 <sup>-10</sup> mbar
Fibre Type	Step Index Multimode 400µm
Core	High Purity Synthetic Silica
Cladding	Doped Silica
Shielding	Stainless Steel
Minimum Bend Radius	80mm
Connectors	F-SMA-905 Ferrule on one side as option
Transmission	See Spectra on page 7.16



In-vacuum cable: F-SMA connector with SS shielded fibre.

This Vacuum Side Plug is used to vacuum seal unused feedthroughs.

#### In-Vacuum Multimode Fibres UHV Versions 400 micron

REDUCED

TYPE	LENGTH	PART NUMBER	EURO
UV, SMA-SMA	300	151-SMA400-UV-300	320,00
UV, SMA-SMA	600	151-SMA400-UV-600	350,00
UV, SMA-Ferrule	600	151-SMA400F-UV-600	350,00
IR, SMA-SMA	300	151-SMA400-IR-300	320,00
IR, SMA-SMA	600	151-SMA400-IR-600	350,00
IR, SMA-Ferrule	600	151-SMA400F-IR-600	350,00

Other lengths available! 200µm and 600µm on request.

#### Replacement O-Rings

O-RING	No per PKT.	PART NUMBER	EURO
BUNA-N	10	152-FCF-OB-10	27,00
VITON	1	152-FCF-OV	30,00

#### Fibre Optic Coupler Feedthroughs Vacuum Side Plug

TYPE	No per PKT.	PART NUMBER	EURO
PLUG	1	152-FPLUG	38,00

- 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
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- 16 Atlas Bi-Metal

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
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### UHV Fibre Optic All Metal Feedthroughs

Alllectra offers Fibre Optic All Metal Feedthroughs:

- UHV Fibre Optic All-Metal feedthrough - 600  $\mu\text{m}$  Multi-mode Fibre
- Also available with 200 $\mu\text{m}$  and 400 $\mu\text{m}$  fibre
- UHV Fibre Optic F-SMA Couplers - Air and Vacuum Service
- Max. Power: 100kW/  $\text{cm}^2$  CW  
 500kW/  $\text{cm}^2$  Pulses < 1 $\mu\text{s}$   
 (theoretical values by ideal beam profile)



#### UHV Fibre Optic All-Metal feedthrough includes 600 micron Multimode Fibre

FLANGE	TYPE	PART NUMBER	EURO
16CF	UV	150-FFT-UV-C16	627,00
40CF	UV	150-FFT-UV-C40	640,00
40CF	UV x 2	150-FFT-UV-C40-2	940,00
16CF	IR	150-FFT-IR-C16	627,00
40CF	IR	150-FFT-IR-C40	640,00
40CF	IR x 2	150-FFT-IR-C40-2	940,00

#### Specification UHV Fibre Optic All-Metal F/T

Vacuum	UHV, <2x 10 <sup>-10</sup> mbar l/s
Temperature	200°C max. bakeout
Fibre	600 $\mu\text{m}$ Step index Multimode
Damping UV Type	<1.2db/m at 248nm
	<0.26db/m at 308nm
Damping IR Type	<0.01db/m at 1064nm
Transmission spectra	see next page



Feedthrough with Vacuum Side Coupler



150-FFT-UV-C40

#### Specification for In-Vacuum Fibre (600 $\mu\text{m}$ ) for All-metal Feedthrough

Vacuum	10 <sup>-10</sup> mbar
Fibre Type	Step Index Multimode 600 $\mu\text{m}$
Core	High Purity Synthetic Silica
Cladding	Doped Silica
Shielding	Stainless Steel
Minimum Bend Radius	80mm
Connectors	F-SMA-905 Ferrule on one side as option

#### In-Vacuum Fibres UHV Versions Step Index Multimode 600 $\mu\text{m}$

REDUCED

TYPE	LENGTH	PART NUMBER	EURO
UV, SMA-SMA	300	151-SMA600-UV-300	346,00
UV, SMA-SMA	600	151-SMA600-UV-600	386,00
UV, SMA-Ferrule	300	151-SMA600F-UV-300	346,00
UV, SMA-Ferrule	600	151-SMA600F-UV-600	386,00
IR, SMA-SMA	300	151-SMA600-IR-300	346,00
IR, SMA-SMA	600	151-SMA600-IR-600	386,00
IR, SMA-Ferrule	600	151-SMA600F-IR-600	386,00

Other lengths available on request

#### UHV Fibre Optic F-SMA Couplers Air and Vacuum Service

VACUUM	TYPE	PART NUMBER	EURO
UHV	F-SMA	151-FC-UHV	33,00
AIR	F-SMA	151-FC-AIR	18,00



The UHV Feedthroughs use the same in-vacuum fibre as the Coupler Feedthroughs. We can offer custom lengths as required.

### UHV Fibreoptic Feedthrough with attached In-vacuum Fibre, SMA Types

Fibreoptic Feedthroughs with attached In-vacuum Fibre reduce transmission losses as well as costs. The 400µm fibre has F-SMA905 connectors on both ends. A ferrule on the vacuum end is also available. Also available with 200µm and 600µm fibres and with FC-PC connectors.

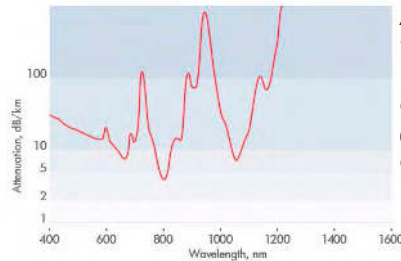


#### General Specification for Multi-mode Fibres

Vacuum	UHV, <math>5 \times 10^{-10}</math> mbar l/s
Seal	All Metal
Connectors	SS (Vacuum side)
Temperature	200°C bakeout -25...+75°C working
Fibre Type	Multi-Mode Fibre, Step Index, 400µm Core ø
Nom. Aperture	0.22
Connectors	FSMA-905 both sides (= SMA) ferrule without nut optional on vacuum side
Standard length	up to 1000mm

#### UHV Fibre Feedthroughs 400 micron Multi-mode F-SMA to F-SMA, UV Type, 1m Fibre

FLANGE	FIBRE	PART NUMBER	EURO
16CF	1x UV	150-UV-S-S-1000-C16	621,00
40CF	1x UV	150-UV-S-S-1000-C40	625,00
40CF	2x UV	150-UV-S-S-1000-C40-2	1220,00
40CF	3x UV	150-UV-S-S-1000-C40-3	1765,00



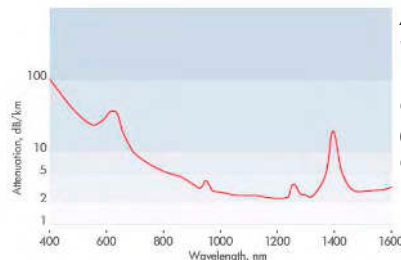
Attenuation versus wavelength for UV fibre. Values are given in dB/km (valid for 200µm/400µm and 600µm fibres)

#### Specification for UV Fibre 200/400/600 micron Multi-mode

UV FIBRE Type	(200...) 400 – 1600nm
Transmission	(200...) 400 – 1600nm
Damping of fibre	~3 dB /m at 200nm ~0.05 dB/m at 400nm <0.15 dB/m 400 ... 900nm

#### UHV Fibre Feedthroughs 400 micron Multi-mode F-SMA to F-SMA, IR Type, 1m Fibre

FLANGE	FIBRE	PART NUMBER	EURO
16CF	1x IR	150-IR-S-S-1000-C16	621,00
40CF	1x IR	150-IR-S-S-1000-C40	625,00
40CF	2x IR	150-IR-S-S-1000-C40-2	1220,00
40CF	3x IR	150-IR-S-S-1000-C40-3	1765,00



Attenuation versus wavelength for IR fibre. Values are given in dB/km (valid for 200µm/400µm and 600µm fibres)

#### Specification for IR Fibre 200/400/600 micron Multi-mode

IR FIBRE Type	(400...) 600 – 2000nm
Transmission	(400...) 600 – 2000nm
Damping of fibre	~0.1 dB /m at 400nm ~0.05 dB/m at 600nm ~0.03 dB/m at 1000nm ~0.03 dB/m at 1600nm

These fibres can be extended in Vacuum by using a Fibre Coupler and a SMA UHV Fibre

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
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## 125µm UHV Fibre Feedthroughs, Multi-Mode and Single Mode

Fibres with a cladding diameter of 125µm are offered with FC-PC Connectors. On the air side, the fibre has a standard length of 300mm. On the vacuum side a version with a Ferrule instead of the FC connector is offered.

A Multi-mode version with 50µm core is available as well as two Single mode types with 9µm or 6µm cores.

*Air and vacuum side lengths can be made according your requirements!*

### General Specification 125µm Fibre types

Vacuum	UHV, <math>5 \times 10^{-10}</math> mbar l/s
Sealing	All Metal
Temperature	200°C bakeout -25...+75°C working
Connectors	FC-PC (physical contact) both sides Ferrule on vacuum side optional
Fibres	Graded-Index Fibre, 125µm cladding diameter
Standard Lengths	up to 1000mm, 300mm on Air



FC-PC connector with ceramic ferrule on the vacuum end of the feedthrough. Alternatively the fibre end can be terminated with a ferrule. Customised lengths are possible.

### Specification 125/50µm Multi-Mode Fibre F/T

Fibre Type	Multimode, 50µm Core Ø, 125µm OD
Transmission	600 – 2000 nm
Nom. Aperture	0.22
Damping	~0.014 dB /m at 1300nm

### UHV Fibre Optic All-Metal Feedthrough 50µm Core, 125µm OD, Multi-Mode Fibre 1m long NEW

FLANGE	FIBRE	PART NUMBER	EURO
16CF	1x 125/50µm, 1000 mm	150-50-F-F-1000-300-C16	756,00
40CF	1x 125/50µm, 1000 mm	150-50-F-F-1000-300-C40	760,00
40CF	2x 125/50µm, 1000 mm	150-50-F-F-1000-300-C40-2	1490,00
40CF	3x 125/50µm, 1000 mm	150-50-F-F-1000-300-C40-3	2220,00

### Specification 125/9µm Single-Mode Fibre F/T

Fibre Type	Monomode, 9µm Core Ø, 125µm OD
Transmission	1300 – 1600 nm
Cut-Off	<1250 nm
Num. Aperture	0.13
Damping	~0.0055 dB /m at 1300nm

### UHV Fibre Optic All-Metal feedthrough 9µm Core, 125µm OD, Single-Mode Fibre 1m long NEW

FLANGE	FIBRE	PART NUMBER	EURO
16CF	1x 125/9µm, 1000 mm	150-09-F-F-1000-300-C16	766,00
40CF	1x 125/9µm, 1000 mm	150-09-F-F-1000-300-C40	770,00
40CF	2x 125/9µm, 1000 mm	150-09-F-F-1000-300-C40-2	1510,00
40CF	3x 125/9µm, 1000 mm	150-09-F-F-1000-300-C40-3	2250,00

### Specification 125/6µm Single-Mode Fibre F/T

Fibre Type	Monomode, 6µm Core Ø, 125µm OD
Transmission	800 – 900 nm
Cut-Off	<770 nm
Num. Aperture	0.13
Damping	~0.0105 dB /m at 850nm

### UHV Fibre Optic All-Metal Feedthrough 6µm Core, 125µm OD, Single-Mode Fibre 1m long NEW

FLANGE	FIBRE	PART NUMBER	EURO
16CF	1x 125/6µm, 1000 mm	150-06-F-F-1000-300-C16	766,00
40CF	1x 125/6µm, 1000 mm	150-06-F-F-1000-300-C40	760,00
40CF	2x 125/6µm, 1000 mm	150-06-F-F-1000-300-C40-2	1510,00
40CF	3x 125/6µm, 1000 mm	150-06-F-F-1000-300-C40-3	2250,00

Fibre Coupler for air and vacuum side are available: we offer FC-FC and FC-ST types.



UHV and High Vacuum Valves



**8.1 UHV AND HIGH VACUUM GATE VALVES**

-> Page 8.2

- UHV and High Vacuum Gate Valves - Manual
- UHV and High Vacuum Gate Valves - Pneumatic with Position Indicator
- UHV and High Vacuum Gate Valves - Spare Gasket Sets
- High Vacuum Rectangular Gate Valves - Pneumatic with Position Indicator



**8.2 UHV AND HIGH VACUUM RIGHT ANGLE VALVES -> Page 8.4**

- SMC Valves, Right Angle - Manual
- SMC Valves, Right Angle - Pneumatic
- CF UHV Right Angle Valves - Stainless Steel - Manual
- CF UHV Right Angle Valves - Stainless Steel - Pneumatic



**8.3 ALL METAL VALVES**

-> Page 8.5

- UHV All metal Valves - Manual Right Angle
- UHV Miniature Leak Valve
- UHV Precision Leak Valve



- 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
- 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

## UHV and High Vacuum Gate Valves - Manual

### Pneumatic with Position Indicator

As Distribution partner of HVA, Allectra offers a full range of Gate Valves for HV and UHV applications.

More than 30 years of experience make HVA valves to one of the leading valve manufacturers over the world.

- Manual and Electro-pneumatic versions
- Edge Welded Bellows plate movement
- Spare parts and In House Service
- 1 Million Cycles as option



### Specification Gate Valves - Manual

Sizes	DN16CF - DN350CF DN16KF - DN600ISO
Material	Stainless Steel
Max. Temperature	open 200°C closed 150°C
Bellows	Edge Welded
Gasket Gate	Viton
Bonnet seal	Metal (UHV) / Viton (HV)
Vacuum	<2*10 <sup>-10</sup> mbar l/s
Orientation	any
Cycles	100.000 to first service

*For full dimensional information please ask the Sales Office for the Gate Valve Data Sheet*

### Specification Gate Valves - Pneumatic

Air Cylinder	Aluminium-cylinder
Air Pressure	4.8 - 6.9 bar adjustable closure speed
Solenoid	24V DC Standard
Position Indicator	REED, 28V max. 20 mA



### UHV and High Vacuum Gate Valves MANUAL

FLANGE	THICKNESS	PART NUMBER	EURO
16CF	39,6	515-GV-C16	983,00
40CF	51,6	515-GV-C40	1.267,00
63CF	61,2	515-GV-C63	1.532,00
100CF	75,4	515-GV-C100	2.115,00
160CF	80,5	515-GV-C160	2.753,00
200CF	85,0	515-GV-C200	POR
250CF	92,8	515-GV-C250	POR
16KF	75,2	515-GV-K16	841,00
40KF	50,7	515-GV-K40	1.193,00
50KF	50,7	515-GV-K50	1.219,00
63-ISO	51,4	515-GV-ISO63	1.350,00
100-ISO	61,2	515-GV-ISO100	1.954,00
160-ISO	59,9	515-GV-ISO160	2.285,00
200-ISO	67,4	515-GV-ISO200	POR
250-ISO	80,1	515-GV-ISO250	POR

### UHV and High Vacuum Gate Valves PNEUMATIC WITH POSITION INDICATOR

FLANGE	THICKNESS	PART NUMBER	EURO
16CF	39,6	515-GV-C16-P	1.071,00
40CF	51,6	515-GV-C40-P	1.349,00
63CF	61,2	515-GV-C63-P	1.665,00
100CF	75,4	515-GV-C100-P	2.269,00
160CF	80,5	515-GV-C160-P	2.891,00
200CF	85,0	515-GV-C200-P	POR
250CF	92,8	515-GV-C250-P	POR
16KF	75,2	515-GV-K16-P	938,00
40KF	50,7	515-GV-K40-P	1.253,00
50KF	50,7	515-GV-K50-P	1.288,00
63-ISO	51,4	515-GV-ISO63-P	1.1426,00
100-ISO	61,2	515-GV-ISO100-P	2.079,00
160-ISO	59,9	515-GV-ISO160-P	2.420,00
200-ISO	67,4	515-GV-ISO200-P	POR
250-ISO	80,1	515-GV-ISO250-P	POR

*From left to right:*  
 - 515-GV-C100, manual  
 - 511-GV-C160-P, pneumatic  
 - 511-GV-C200, manual

**UHV and High Vacuum Gate Valves - Spare Gasket-Sets**

**Rectangular Pneumatic Gate Valves**

Allectra Gate Valves are designed for convenient user servicing. The valve mechanism can be removed leaving the body in the vacuum system. All constructional bolts are metric. Spares are readily available.



**Specification for UHV/ HV Gate Valves Spare Gasket Sets**

Gaskets	Replacement Gasket Sets include two Gaskets (UHV: Viton + Metal)
Spare Parts	A full range of Spare Parts including bellows and pneumatic cylinders are available on request.



*Spare Gate Valve Gasket set*

**UHV CF Gate Valves SPARE GASKET SETS (1Viton, 1 Metal)**

FLANGE	GASKETS	PART NUMBER	EURO
16CF	2	515-GVG-C16	21,00
40CF	2	515-GVG-C40	38,00
63ICF	2	515-GVG-C63	42,00
100CF	2	515-GVG-C100	66,00
160CF	2	515-GVG-C160	80,00
200CF	2	515-GVG-C200	94,00
250CF	2	515-GVG-C250	POR

**HV KF/ISO Gate Valves SPARE GASKET SETS (2xViton)**

FLANGE	GASKETS	PART NUMBER	EURO
16KF	2	515-GVG-K16	18,00
40KF	2	515-GVG-K40	28,00
50KF	2	515-GVG-K50	34,00
63ISO	2	515-GVG-ISO63	36,00
100ISO	2	515-GVG-ISO100	48,00
160ISO	2	515-GVG-ISO160	66,00
200ISO	2	515-GVG-ISO200	72,00
250ISO	2	515-GVG-ISO250	POR

**Specification for Rectangular Gate Valves**

Vacuum	HV 10 <sup>-9</sup> mbar
Bakeout	150°C open and closed (Sensor 60°C max)
Air cylinder	Aluminium-cylinder
Air Pressure	4.8 – 6.9 bar adjustable closure speed
Solenoid	24V DC Standard
Position Indicator	REED, 28V max. 20mA
First service	1.000.000 cycles

**High Vacuum Rectangular Gate Valves PNEUMATIC WITH POSITION INDICATOR**

APERTURE	THICKNESS	PART NUMBER	EURO
32 X 220	60	515-RAGV-32x220	POR
33 X 332	60	515-RAGV-33x332	POR
46 X 223	60	515-RAGV-46x223	POR
50 X 336	60	515-RAGV-50x336	POR

*For full dimensional information on the Rectangular Gate Valves, please ask Sales Office for the Data Sheet*

- 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

### Viton Sealed Right Angle Valves -SMC-

Allectra represents the high quality SMC pneumatic and manual angle valve. With a standard lifetime of 2.000.000 cycles they are suitable for demanding applications also in industrial applications. Here are only listed the basic versions, many options are available:

- Manual and Pneumatic versions
- CF versions with SS body
- Normally open pneumatic valves
- 2-Step control with bypass (to avoid turbulences)

Please ask for the full SMC catalogue!



#### Specification SMC Right Angle - Aluminium Manual + Pneumatic

Size	16/ 25/ 40/50/ 63KF, ISO-K63
Seal	Viton
Leak rate	<1x10 <sup>-9</sup> mbar l /s
Bake Temp.	60°C / 150°C as option
Port Length	(symmetric) from port to centre axis
16KF	40 mm
25KF	50 mm
40KF	65 mm
50KF	70 mm
ISO-K	88 mm
Lifetime	100.000 manual/ 2 Mio pneum.

Pneumatic valves need an air pressure of 4 -7 bar. A solenoid valve 24V DC is included as standard. Valves listed here are normally closed.

#### High Vacuum Right Angle Valves Aluminium - MANUAL

FLANGE	SEAL	PART NUMBER	EURO
16KF	VITON	518-AV-K16-V-ALU	294,00
25KF	VITON	518-AV-K25-V-ALU	309,00
40KF	VITON	518-AV-K40-V-ALU	457,00
50KF	VITON	518-AV-K50-V-ALU	556,00

#### High Vacuum Right Angle Valves Aluminium - PNEUMATIC

FLANGE	SEAL	PART NUMBER	EURO
16KF	VITON	518-AVP-K16-V-24V	354,00
25KF	VITON	518-AVP-K25-V-24V	374,00
40KF	VITON	518-AVP-K40-V-24V	522,00
50KF	VITON	518-AVP-K50-V-24V	615,00
ISO-K63	VITON	518-AVP-ISO63-V-24V	916,00

#### Specification for Right Angle Valves - Stainless Steel CF flanges, Manual + Pneumatic

Size	16CF / 40CF / 63CF
Seal	Viton
Leak rate	<10 <sup>-9</sup> mbar l /s
Bakeout temp	150°C closed
Port Length	(symmetric) from port to centre axis
16CF	40mm
40CF	65mm
63CF	105mm

Please ask the Sales Office for a full catalogue of the SMC valves!  
 Inline Valves are available as well.

#### UHV Right Angle Valves Stainless Steel MANUAL

FLANGE	SEAL	PART NUMBER	EURO
16CF	VITON	511-AV-C16-V	378,00
40CF	VITON	511-AV-C40-V	509,00
63CF	VITON	511-AV-C63-V	1.034,00

#### UHV Right Angle Valves Stainless Steel PNEUMATIC

FLANGE	SEAL	PART NUMBER	EURO
16CF	VITON	511-AVP-C16-V	496,00
40CF	VITON	511-AVP-C40-V	633,00
63CF	VITON	511-AVP-C63-V	1.171,00



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

**All Metal Valves - Manual Right Angle**

All Metal Right Angle valves are designed and specially built for Allectra by a major UHV valve company. They are suitable for ultimate UHV service.

- Copper Gasket to Stainless Steel knife edge seal
- With two rotatable through hole flanges
- Bakeable to 450°C
- Stainless Steel construction with a replaceable Copper sealing pad.



**Specification All Metal Valves**

Vacuum	UHV ( $10^{-12}$ mbar to atmosphere)
Leak rate	$< 10^{-11}$ mbar l/s
Material	SS and Copper
Max. Temp.	450°C open 300°C closed
Port length from valve axis	16CF 38 mm 40CF 63 mm
Sealing Pad	Cu- replaceable through side port
Conductance	16CF 5 l/s 40CF 34 l/s

**UHV All metal Valves  
MANUAL RIGHT ANGLE**

FLANGE	TUBE	PART NUMBER	EURO
-	19.1	512-AMV16	485,00
16CF	19.1	512-AMV16-C16	575,00
-	41.3	512-AMV40	598,00
40CF	41.3	512-AMV40-C40	690,00

**UHV All metal Valves  
Replacement Copper Pads**

FLANGE	SEAL	PART NUMBER	EURO
16CF	Cu	512-AMV16-PAD	POR
40CF	Cu	512-AMV40-PAD	POR

**Closure Torque**

All metal Right Angle Valves are provided with a closure mark. They can be closed by aligning the indicator marks on the body and the top nut. Alternatively they can be shut with a torque wrench. The torque required is as below:

512-AMV16	2.4 to 3.7 Nm
512-AMV40	7.7 to 12.1 Nm

*For full dimensional details, please ask Sales Office for the All Metal Valve Data Sheet*



512-AMV40-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
- 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
- 8 Valves
- 9 Motion Manipulation
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### UHV Miniature Leak Valve

### UHV Precision Leak Valve

Allectra offers two types of UHV leak valves. Both types are an All metal bakeable construction. Miniature type has Nickel diaphragm suitable for hot or corrosive gases

- 16CF or 40CF flanges
- Spare parts available



#### Specification Miniature Leak Valve

Vacuum	UHV
Min leak	10 <sup>-7</sup> mbar-l/sec
Closed leak	< 10 <sup>-12</sup> mbar l/s
Max. Inlet Pressure	10 bar
Max. Conductance	0.1 l/s
Max Temp open	450°C
Max. Temp. closed	250°C
Materials	SS, Nickel Diaphragm
Gas inlet	16CF
Gas outlet	16CFT (tapped M4) suitable for hot or corrosive gases

#### Miniature UHV Leak Valve 16CF Tapped Flange in base of body

BASE FL.	SIDE FL.	PART NUMBER	EURO
16CF TAPPED	16CF	514-LVF-C16	690,00

#### Specification Precision Leak Valve

Vacuum	UHV
Min leak	10 <sup>-11</sup> mbar-l/sec
Closed leak	< 10 <sup>-12</sup> mbar l/s
Max. Inlet Pressure	10 bar
Max. Conductance	0.1 l/s
Max Temp open	450°C
Max. Temp. closed	250°C
Materials	SS, Sapphire Seal
Gas inlet	16CF
Gas outlet	16CFT (tapped UNC) or 40CF

#### UHV All Metal Valves Precision Leak Valve

BASE FL.	SIDE FL.	PART NUMBER	EURO
16CF TAPPED	16CF	514-LVP-C16	1.420,00
40CF	16CF	514-LVP-C40	1.480,00

The Precision Leak valve with 16CF outlet flange is only available with an UNC tapped flange. A set of screws is delivered with this valve.



*For full dimensional details of the UHV leak Valves, please ask the Sales Office for the Leak Valves Data Sheet*

Linear Drives, Rotary Motion Drives and Manipulators



**9.1 LINEAR DRIVES: MANUAL, MOTORIZED, PNEUMATIC**

-> Page 9.2

UHV bellows COMPACT Drives - Manual Knurled-Knob-Types  
 UHV bellows COMPACT Drives - Stepper-Motor-Driven-Types  
 UHV bellows Linear Drives - Manual Push-Pull-Types  
 UHV bellows Linear Drives - Pneumatic-Types and other options



**9.2 ROTARY MOTION DRIVES**

-> Page 9.4

Rotary Motion Drives - UHV-Bellows-Types, Length from flange 38mm  
 Rotary Motion Drives - UHV-Bellows-Types, Extended length types  
 Rotary Motion Drives - Magnetically-Coupled-Type



**9.3 Z-SHIFTERS (LINEAR TRANSLATORS)**

-> Page 9.5

Z-Shifters - UHV bellows type  
 Z-Shifters - Mini Z type  
 Rotary/Linear Push Pull - Differentially pumped

**9.4 UHV MANIPULATORS AND ACCESSORIES**

-> Page 9.6

Compact UHV-Manipulators  
 High Precision UHV-Manipulators  
 UHV Long Travel Z-Translator  
 Compact X-Y Stages  
 Precision Rotary Motion Drives Single axis  
 Precision Rotary Motion Drives Rotation + Linear



**9.5 MAGNETIC TRANSPORTERS AND ACCESSORIES -> Page 9.8**

UHV Magnetic Transporters  
 High Vacuum Magnetic Transporters  
 Guide Option for Linear Motion Only  
 Quick Access Doors No Viewport  
 Quick Access Doors with Viewport  
 Load Lock Chambers



**9.6 WOBBLE STICKS AND PORT ALIGNERS**

-> Page 9.10

Simple Wobble Stick - no locking mechanism  
 Compact Tilting Port Aligner  
 Precision Tilting Port Aligner



**9.7 In-VACUUM STEPPER MOTORS AND SLIDES**

-> Page 9.11

In-vacuum Stepper Motor/ Fine Vacuum Motor  
 In-vacuum Stepper Motor/ High Vacuum Motor  
 In-vacuum Stepper Motor/ UHV with special lubricant  
 In-vacuum Stepper Motor/ UHV - NO lubricant

In-vacuum Motorised Slides

- 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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## Linear Drives Manual and Motorised – COMPACT type

A new range of linear drives designed for demanding applications where precise positioning of components is required.

- Manual drive with knurled knob and position scale (min readout: 10µm)
- Stepper Motor version with scale and limit switches option

Typical applications include shutter control.



### Specification Compact Drives

Vacuum	UHV
Temp.	220°C max (Stepper Motors removed)
Materials	Stainless Steel, Aluminium
Seal	TIG weld
Bellows	Edge welded
Shaft	6 mm
Shaft tip	M4 tapped hole

### Specification Manual types

Travel/ rev.	1 mm
Min readout	10µm
Dimensions - please ask for a full data sheet	

### Specification Motorised types

Motor	2 phase stepper
Wires	8 wire
Current max	2 A per phase (Bipolar wiring)
Travel	5µm / 1 full step
Repeatability	+/-1 µm typical
Manual knob	included
Limit Switches	Optional



Drive with limit switch box. A single Sub-D connector is used for stepper motor connection and mechanical limit switches

### 16CF MANUAL KNURLED KNOB types 6 mm shaft

FLANGE	TRAVEL	PART NUMBER	EURO
16CF	25 mm	612-CLD25-C16	595,00
16CF	50 mm	612-CLD50-C16	695,00
16CF	100 mm	612-CLD100-C16	930,00

Note: also available on 40CF and other flanges

### 16KF MANUAL KNURLED KNOB types 6 mm shaft

FLANGE	TRAVEL	PART NUMBER	EURO
16KF	25 mm	612-CLD25-K16	595,00
16KF	50 mm	612-CLD50-K16	695,00
16KF	100 mm	612-CLD100-K16	930,00

Note: also available on 25KF and 40KF flanges

### UHV bellows COMPACT Drives STEPPER MOTOR driven types - 6 mm shaft

FLANGE	TRAVEL	PART NUMBER	EURO
16CF	25 mm	612-CLD25-SM-C16	960,00
16CF	50 mm	612-CLD50-SM-C16	1.030,00
16CF	100 mm	612-CLD100-SM-C16	1.180,00

Note: also available on KF and other flanges

### UHV bellows COMPACT Drives STEPPER MOTOR with LIMIT SWITCH BOX

FLANGE	TRAVEL	PART NUMBER	EURO
16CF	25 mm	612-CLD25-SM-LS-C16	POA
16CF	50 mm	612-CLD50-SM-LS-C16	1.440,00
16CF	100 mm	612-CLD100-SM-LS-C16	POA

Note: also available on KF and other flanges

The standard axis has a diameter of 6mm with an M4 vented thread in the tip. Min. Length is 90mm for CF16, 101mm for CF40 and 102mm for all KF versions.

We can offer special axis with competitive prices. Please ask for your quote



**Linear Drives, Push-Pull and Pneumatic**

Linear drives are designed for rapid full travel operation where fast response is required.

Note that the drivers are interchangeable and the Manual one can be exchanged for Pneumatic.

Additionally a Manual knob allowing intermediate position control is available as an option.

- Manual version Quick Action Push-Pull
- Pneumatic option
- All metal edge welded bellows construction

**Specification Linear Drives**

Vacuum	UHV
Temperature	220°C max
Materials	Stainless Steel
Seal	weld
Bellows	Edge welded
Shaft	6 mm
Cycles	>10.000
Operation	Manual Push-Pull ( Rotary Knob + Pneumatic actuator option)



612-LD100-PP-C16, Push-Pull drive with 100 mm travel

**Specification Pneumatic types**

Air pressure	5-7 bar
Voltage	24 V DC
	24 V AC and 240 V AC option



Pneumatic linear drive 612-LD50-PM-C16 with rotary knob exchange kit



**16CF UHV bellows Linear Drives  
MANUAL PUSH-PULL types**

FLANGE	TRAVEL	PART NUMBER	EURO
16CF	25 mm	612-LD25-PP-C16	595,00
16CF	50 mm	612-LD50-PP-C16	695,00
16CF	100 mm	612-LD100-PP-C16	899,00

Note: also available on 40CF and other flanges

**16KF bellows Linear Drives  
MANUAL PUSH-PULL types**

FLANGE	TRAVEL	PART NUMBER	EURO
16KF	25 mm	612-LD25-PP-K16	595,00
16KF	50 mm	612-LD50-PP-K16	695,00
16KF	100 mm	612-LD100-PP-K16	899,00

Note: also available on 25KF, 40KF and other flanges

**UHV bellows Linear Drives  
PNEUMATIC types**

FLANGE	TRAVEL	PART NUMBER	EURO
16CF	25 mm	612-LD25-PM-C16	595,00
16CF	50 mm	612-LD50-PM-C16	698,00
16CF	100 mm	612-LD100-PM-C16	878,00

Note: also available on KF and other flanges

**UHV bellows Linear Drives  
OPTIONS**

OPTION		PART NUMBER	EURO
Position indicator		614-LD-PI	31,00
Double axis		614-LD-DD	30,00
Solenoid	24V DC	614-SV-24VDC	75,00
Solenoid	230V AC	614-SV-230V	75,00
Rot. Knob exchange kit		614-KIT-RD-XXX	POR
Push-Pull exchange kit		614-KIT-PP-XXX	POR
Pneumatic exchange kit		614-KIT-PM-XXX	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

- 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
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### Rotary Motion Drives

Allectra offers both bellows sealed type Rotary Drives and Magnetically Coupled types.  
 A new High Torque Magnetically Coupled Drive is now available.  
 The Bellows Type Rotary Drives are also offered in extended length versions.



#### Rotary Motion Drives UHV bellows types, Length from flange 38 mm

FLANGE	SHAFT DIAM.	PART NUMBER	EURO
16CF	6 mm	611-RD-C16	597,00
40CF	6 mm	611-RD-C40	692,00

#### Rotary Motion Drives UHV bellows types, Extended length types

FLANGE	SHAFT DIAM.	PART NUMBER	EURO
16CF	6 mm	611-RD-C16-XX	POR
40CF	6 mm	611-RD-C40-XX	POR

Extended length versions are built to order. The Part Number "XX" refers to the length from the flange face to the tip. Please call or e-mail the Sales Office for a quotation.

#### Rotary Motion Drives Magnetically Coupled type

FLANGE	TORQUE	PART NUMBER	EURO
16CF	0.15Nm	611-MRD-C16L	554,00
16CF	0.49Nm	611-MRD-C16	696,00
40CF	2.45Nm	611-MRD-C40	1129,00



High Torque magnetic rotary drive on CF40 Flange. With more than 2.4Nm, it can be used for demanding applications.

#### Specification Bellows Type Rotary Drives

Vacuum	UHV
Temp.	220°C max
Materials	Stainless Steel
Bellows	Edge welded
Shaft	6 mm with flat
Shaft length	38mm
Cycles	> 10.000



611-RD-C16

#### Specification Magnetically Coupled Drives

Vacuum	UHV
Temp.	to 150°C / 250°C with magnet removed
Torque	see product table
Shaft	30mm long, M4 tapped hole at tip ø 6mm (16CF) / ø10mm (40CF)
Shaft concentricity	> +/- 0.1mm
Max. Speed	500rpm
Motor	DC or Stepper option Pneumatic actuator option

The following options are available for Magnetically Coupled Rotary Drives

- DC Motor
- Pneumatic actuator
- Stepper motor

Please contact Sales Office for details

Z-Shifters (Linear Translators)

Z-Shifter Mini-Z type

Differentially Pumped Push-Pull

Allectra offers a range of devices for moving components inside the Vacuum.

- Bellows all metal Z-Shifters with travel up to 200 mm
- Mini Z-Shifters with travel up to 50 mm
- A low cost Rotary/ Linear Push Pull device with a double O ring seal and differential pumping.

Specification Z Shifters

Vacuum	UHV
Temp.	220°C max
Materials	Stainless Steel
Bellows	Edge welded
Flanges	16CF: both tapped 40CF: top flange tapped 63CF: through holes
Through Bore	16CF: 16mm 40CF: 36mm (38mm on request) 63CF: 63mm



Z-Shifters  
UHV bellows type

FLANGE	TRAVEL	PART NUMBER	EURO
40CF	25 mm	621-LT-C40-25	1.460,00
40CF	50 mm	621-LT-C40-50	1.726,00
40CF	100 mm	621-LT-C40-100	1.943,00
40CF	150 mm	621-LT-C40-150	2.438,00
40CF	200 mm	621-LT-C40-200	3285,00
63CF	50 mm	621-LT-C63-50	POR
63CF	100 mm	621-LT-C63-100	POR

Z-Shifters  
UHV Mini Z type

FLANGE	TRAVEL	PART NUMBER	EURO
16CF	25 mm	621-LTM-C16-25	557,00
16CF	50 mm	621-LTM-C16-50	724,00



621-LTM-C16-25



613-RLHD700-K40  
700mm Travel  
Version without pumping port



Long travel O-ring sealed push-pull drive



613-RLD200-DP-C40 with 16KF Pumping Port

Rotary/ Linear Push Pull 200 mm / 500 mm travel  
Differentially pumped dual O rings

NEW

FLANGE	TRAVEL	PART NUMBER	EURO
40CF	200 mm	613-RLD200-DP-C40	389,00
25KF	200 mm	613-RLD200-DP-K25	389,00
40KF	200 mm	613-RLD200-DP-K40	389,00
40CF	700 mm	613-RLHD700-DP-C40	595,00
40KF	700 mm	613-RLHD700-DP-K40	495,00
40CF	1000 mm	613-RLHD1000-DP-C40	665,00
40KF	1000 mm	613-RLHD1000-DP-K40	565,00

Other lengths are available on request.

KF Versions are available also without pumping port.

- 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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- 9 Motion Manipulation
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### UHV Compact Manipulator CMX

The Compact Manipulator features:

- UHV Compatibility bakeable to 200°C
- 40CF Flange with 36 mm through bore
- Optional 63CF or 100CF base flange
- +/-10mm of X/Y movement by micrometer

### High Precision X-Y-Z Manipulators HPMX

- 100CF mounting flange with 4 x 16CF accessory ports
- Single and dual axis Precision Rotary Drive options



621-CMX-50-C40 with 63CF base flange option

#### Specification Compact X-Y-Z Manipulators

Vacuum	UHV
Materials	Stainless Steel, Anodised Aluminium
Temperature	200°C max.
Bellows	Edge Welded
X-Y Motion	Micrometer driven
Operation	Manual with mm-Scale for Z travel
Flange	CF with Tapped holes at top and CF with through holes at bottom
Clear Bore	36mm
Travel	Overall height
50 mm	209 mm
100 mm	276 mm
150 mm	366 mm
200 mm	450 mm

#### COMPACT UHV MANIPULATORS Tapped CF Flanges, Bore 36 mm

FLANGE	TRAVEL	PART NUMBER	EURO
40CF	50 mm	621-CMX-50-C40	4,565,00
40CF	100 mm	621-CMX-100-C40	5,143,00
40CF	150 mm	621-CMX-150-C40	5,720,00
40CF	200 mm	621-CMX-200-C40	6,298,00

Note: 63CF or 100CF bottom flange available to order

#### Specification High Precision X-Y-Z Manipulators

Vacuum	UHV
Materials	Stainless Steel, Anodised Aluminium
Temperature	200°C max.
Bellows	Edge Welded
X-Y Motion	Cross Roller Slides with Precision Micrometers +/-12.5mm (+/-25mm option)
Z Motion	Re-circulating ball guides 50mm up to 200 mm
Flange	40CF tapped at top and 100CF through holes at bottom
Accessory ports	4 x 16CF
Clear Bore	
Standard	36 mm
Wide bellows option	45 mm

#### HIGH PRECISION UHV Manipulators 40CFT top flange, 100CF bottom flange

Z TRAVEL	BORE	PART NUMBER	EURO
50 mm	36 mm	623-HPMX-50	POR
100 mm	36 mm	623-HPMX-100	POR
150 mm	36 mm	623-HPMX-150	POR
200 mm	36 mm	623-HPMX-200	POR
50 mm	45 mm	623-HPMX-50-W	POR
100 mm	45 mm	623-HPMX-100-W	POR
150 mm	45 mm	623-HPMX-150-W	POR
200 mm	45 mm	623-HPMX-200-W	POR



Detail of a version with additional springs

Allectra can offer custom built sample heating and cooling stages for many applications. Please call or e-mail Sales Office to discuss your requirements

### UHV Z Axis Long Travel Translator

A range of UHV compatible Linear Translators with travel from 150 mm up to 500 mm.  
 40CF Through Hole Flanges top and bottom  
 Clear Bore of 36 mm  
 0.1 mm Z resolution  
 Motorised option



#### Specification Long Travel Z Stages

Vacuum	UHV
Temp.	220°C max
Materials	Stainless Steel, Anodised Aluminium
Flanges	40CF with through holes at top and bottom
Bellows	Edge welded 36mm clear bore
Z resolution	0.1 mm
Drive Screw	2-axis type

#### LONG TRAVEL Z Shifters UHV bellows type

FLANGE	TRAVEL	PART NUMBER	EURO
40CF	150 mm	621-ZLT-C40-150	POR
40CF	200 mm	621-ZLT-C40-200	POR
40CF	250 mm	621-ZLT-C40-250	POR
40CF	300 mm	621-ZLT-C40-300	POR
40CF	400 mm	621-ZLT-C40-400	POR
40CF	500 mm	621-ZLT-C40-500	POR

### Compact X-Y stage

+/-10mm of X-Y travel  
 40CFT, 63CFT or 100CFT tapped flanges top and bottom  
 Long travel Translators may be mounted on top of the X-Y stages to form a Long travel manipulator.



#### Specification Compact X-Y Stages

Vacuum	UHV
Materials	Stainless Steel
Temperature	200°C max.
Bellows	Edge Welded
X-Y Motion	+/- 10mm Micrometer driven
Flange	CF,tapped holes at top and bottom
Clear Bore	40CF 36 mm 63CF 50 mm 100CF 90 mm

#### Compact X-Y Stages Tapped CF Flanges

FLANGE	BORE	PART NUMBER	EURO
40CF	36 mm	622-XY-12-C40	2990,00
63CF	50 mm	622-XY-12-C63	POR
100CF	90 mm	622-XY-12-C100	POR

### Precision Rotary Drives

Precision extended length Rotary Drives are custom made to suit the application. They are available with Primary Rotation only or Primary and Secondary for use with Sample Holders which have azimuthal motion (tilt) as well as Primary Rotation.

#### Precision Rotary Motion Drives Length to order UHV bellows types, Single axis

FLANGE	SHAFT DIAM.	PART NUMBER	EURO
40CF	9.5 mm	611-PRD-C40-XX	POR

#### Precision Rotary Motion Drives Length to order UHV bellows types, ROTATION + LINEAR 6 mm

FLANGE	SHAFT DIAM.	PART NUMBER	EURO
40CF	9.0 & 3.0 mm	611-PRD2-C40-XX	POR



611-PRD-C40-XX

- 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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## Magnetic Transporters - High Vacuum & UHV

UHV Magnetic Transporters are ideal for long travel applications where High Precision is not required. A typical application is sample transfer from Preparation Chamber to Analysis Chamber. UHV types are suitable for baking to 200°C and can be fitted with a guide to prevent rotary motion if required. For special applications, Allectra can also supply other types of Transporters including Rack and Pinion types and custom sample stages



### General Specification Magnetic Transporters

Vacuum	UHV
Materials	Stainless Steel
Coupling	Magnetic
Decoupling force	20N
Shaft	15.8 mm
End fitting	M5 tapped hole
Temperature	
UHV version	200°C max
Standard	160°C max
Lubricant	
UHV version	none
Standard	330-MCOTE-296

### UHV Magnetic Transporters - No lubricant Linear and Rotary Motion

FLANGE	TRAVEL	PART NUMBER	EURO
40CF	500 mm	615-MTP-0500UHV	2.727,00
40CF	600 mm	615-MTP-0600UHV	2.991,00
40CF	800 mm	615-MTP-0800UHV	3.202,00
40CF	1000 mm	615-MTP-1000UHV	3.413,00



### HIGH VACUUM Magnetic Transporters Linear and Rotary Motion

FLANGE	TRAVEL	PART NUMBER	EURO
40CF	500 mm	615-MTP-0500	1.976,00
40CF	600 mm	615-MTP-0600	2.179,00
40CF	800 mm	615-MTP-0800	2.448,00
40CF	1000 mm	615-MTP-1000	2.695,00

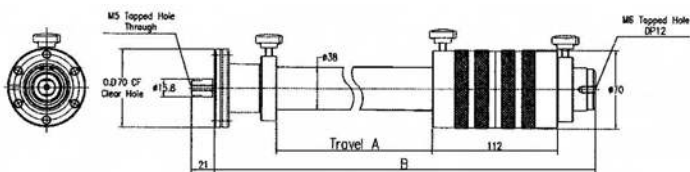
Allectra can also offer special types of Transporters including

- Dual rotation axes
- Rack and pinion

Please call or e-mail Sales Office with details of your requirement

### ALL Magnetic Transporters Guide Option for Linear Motion Only

FLANGE	TRAVEL	PART NUMBER	EURO
40CF	ALL	615-LG-OPT	271,00



615-MTP-0500UHV



Allectra offers a design and build service for sample holder accessories for use with Magnetic Transporters. Existing designs include Sample Cassettes and heated Plates.



Custom made heater

**Quick Access Doors and Load Locks**

Allectra's QAD series offer unequalled ease of access to the Prep. Chamber work area with maximum open diameter and maximum View Diameter.

The 160CF Quick Access Door has a work access diameter of 150 mm, the optional viewport has a View Diameter of 135 mm.

An optional Bakeable Micro-switch allows the door to be coupled into safety circuits to prevent, for instance, incorrect and possibly hazardous valve opening.

**General Specification 640-QAD**

Vacuum	UHV
Materials	SS, Aluminium hinge
Viewport	7056 glass
Viewport Seal	Metal sealed, welded
Door seal	Viton O ring
Temp.	200°C max



**Quick Access Doors NO Viewport  
 Viton door seal, includes Bolt Set**

FLANGE	ID (mm)	PART NUMBER	EURO
63CF	60	640-QAD63	625,00
100CF	95	640-QAD100	885,00
160CF	150	640-QAD160	1.175,00

**Quick Access Doors with Viewport  
 Viton door seal, includes Bolt Set**

FLANGE	VIEW DIAM.	PART NUMBER	EURO
63CF	60 mm	640-QAD63-VP	785,00
100CF	90 mm	640-QAD100-VP	1.050,00
160CF	135 mm	640-QAD160-VP	1.350,00



640-QAD160-VP

Quick Access Doors have a tapped mounting position for a Microswitch to enable the door to be coupled into machine safety circuits. The bakeable microswitch 360-SWITCH-3 (page 70) can be used for high temperature applications.

*General Specification 640-LLC  
 see Chambers Section 15*



640-LLC-100-63-VP

**Load Lock Chambers  
 STAINLESS STEEL with Viton Door & Viewport**

DOOR	VALVE FL.	PART NUMBER	EURO
63CF	63CF	640-LLC-63-63-VP	2.200,00
100CF	63CF	640-LLC-100-63-VP	2.300,00
100CF	100CF	640-LLC-100-100-VP	2.550,00
160CF	100CF	640-LLC-160-100-VP	2.850,00
160CF	160CF	640-LLC-160-160-VP	2.950,00

*Complete Load locks*                      *POR*  
*Rectangular Load Locks*              *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

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## Wobble Sticks and Port Aligners

**Wobble Sticks:** Allectra can offer a selection of Wobble Sticks both single and double action with Pincer Grip Jaws or In-Line-Jaws. Please call Sales Office for details and prices.

**Port Aligner:** This bellows stage allows small adjustments of alignment to be made. It is useful for Electron Guns and similar devices. Please call Sales Office.



616-PA-C40

### General Specification Wobble Sticks

Vacuum	UHV
Materials	316L SS for bellows and flanges
Rod	6,35 mm ø, outer length 54mm
Length in Vac.	106 ... 156mm for 50mm version 44 ... 144mm for 100mm version

### Simple Wobble Stick No locking mechanism

FLANGE	ANGLE	PART NUMBER	EURO
40CF	50 mm +/- 22°	630-SWS50-C40	365,00
40CF	100 mm +/- 22°	630-SWS100-C40	648,00

### Specification Port Aligner

Vacuum	UHV
Temp.	616-PA: 200°C, 616-PPA: 150°C
Materials	316L SS for formed bellows
Top Flange	40CF or 63CF through holes
Bottom Flange	40CFT or 63CFT tapped
Tilt mechanism	3 Rods with position adjustment allowing +/-5° tilt and +/-5mm length
Micrometers	Option PPA models only
Overall height	40CF: 90mm, 63CF: 150mm



630-SWS100-C40

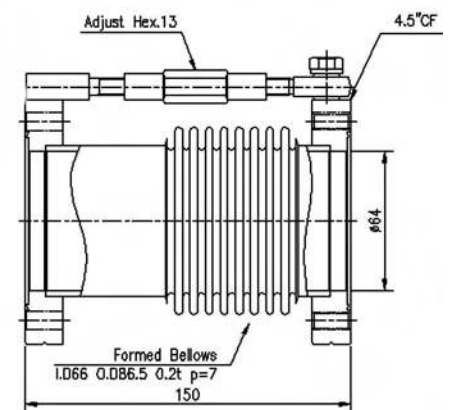
630-SWS50-C40

### Compact Tilting Port Aligner 3 Positional rods with +/- 8°

FLANGE	CLEAR BORE	PART NUMBER	EURO
40CF	36 mm	616-PA-C40	485,00
63CF	64 mm	616-PA-C63	856,00



616-PPA-C40



616-PA-C63

The Precision Port aligner allows a tilt of +/- 5° and a shift of +/-3mm. Both directions are controlled by micrometer screws

### Precision Tilting Port Aligner Micrometer adjustment

FLANGE	CLEAR BORE	PART NUMBER	EURO
40CF	36 mm	616-PPA-C40	865,00
63CF	64 mm	616-PPA-C63	973,00



## In-vacuum Stepper Motors

Allectra offers a range of In-Vacuum Stepper Motors both High Vacuum and UHV Types. These motors offer an alternative to mechanical linkages and bellows in vacuum. Allectra In-Vacuum Motors are conventional 2 phase stepper motors with 200 (optionally 500) steps per revolution. They may be driven by a wide range of commercially available Controllers and Drivers and are suitable for Half Step and Micro-Step Control systems. Values given here are based on the standard Bi-Polar running mode.



### General Specification In-vacuum Stepper Motor

Electrical	2 phase, 4 wire Stepper Motor
Materials	SS housing, Kapton wire insulation
Phase current	1.2 A (Standard)
Sizes	19mm up to 52mm diameter
Holding Torque	see product tables
Rear Shaft Exten.	Standard (motors can be ordered without shaft extension as an option)
Steps per Revolution	200 Standard (500 as Option)

### In-vacuum Stepper Motor: 200 steps per revolution FINE VACUUM Motor

SIZE	HOLD TORQUE	PART NUMBER	EURO
19	3.4 mNm	671-SM19-CL-200-1.2	POR
32	45 mNm	671-SM32-CL-200-1.2	POR
52	405 mNm	671-SM52-CL-200-1.2	POR

### In-vacuum Stepper Motor: 200 steps per revolution HIGH VACUUM Motor

SIZE	HOLD TORQUE	PART NUMBER	EURO
19	3.4 mNm	671-SM19-HV-200-1.2	POR
32	45 mNm	671-SM32-HV-200-1.2	POR
52	405 mNm	671-SM52-HV-200-1.2	POR

### Vacuum Specification

Base Vacuum	
Motor type	
Fine Vacuum	10 <sup>-3</sup> mbar, max. 150°C
High Vacuum	10 <sup>-7</sup> mbar, max. 200°C
UHV (lubricated)	10 <sup>-10</sup> mbar, max. 280°C
UHV (dry)	10 <sup>-11</sup> mbar, max. 280°C
Thermocouple	built-in K Type -UHV motors only
Radiation Res.	to 10 <sup>6</sup> J/ kg -UHV types only

### In-vacuum Stepper Motor: 200 steps per revolution UHV with special lubricant

SIZE	HOLD TORQUE	PART NUMBER	EURO
19	3.4 mNm	671-SM19-UHVG-200-1.2	POR
32	45 mNm	671-SM32-UHVG-200-1.2	POR
52	405 mNm	671-SM52-UHVG-200-1.2	POR

### In-vacuum Stepper Motor: 200 steps per revolution UHV NO lubricant

SIZE	HOLD TORQUE	PART NUMBER	EURO
19	3.4 mNm	671-SM19-UHV-200-1.2	POR
32	45 mNm	671-SM32-UHV-200-1.2	POR
52	405 mNm	671-SM52-UHV-200-1.2	POR



Back side view with rear shaft and outgassing holes

Options for Motors:  
 500 steps per revolution- not available for all types  
 Current per phase 0.3A, 0.6A, 1.2A, 2.5 A, 5A (depending on size)  
 Cryo-Motors for 4K to 40°C  
 Reduction Gears 4:1 down to 256:1

Other size motors on request

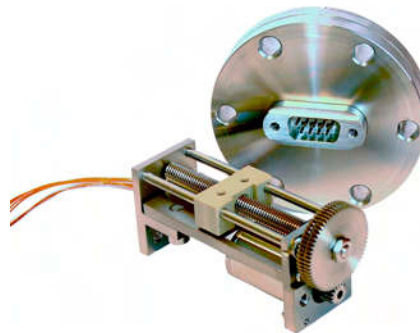
- 1 Sub-D
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### Miniature Motorised Slides

Designed to have smallest possible size with reasonable resolution and price, this slide offers 50 mm travel for low loads (typically 100 g) with a nominal resolution of 1.25  $\mu\text{m}$  per full step. Typical repeatability is < 5  $\mu\text{m}$ .

The vacuum range depends on the choice of Stepper Motor. The slide is UHV compatible. Three different motors are available: HV, UHV-G (with special lubricant) and a dry-lubricant UHV version.

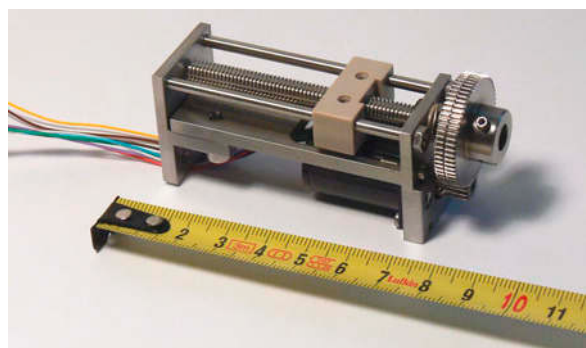


#### General Specification Miniature Slide 50 mm

Base Vacuum	HV	$10^{-7}$ mbar
	UHV(G)	$10^{-10}$ mbar
	UHV	$10^{-11}$ mbar
Material	Stainless Steel, PEEK	
Resolution	1,25 $\mu\text{m}$ / full step	
Dimensions	75 x 27 x 40 mm max.	
Temp. rating	230°C (UHV type only)	

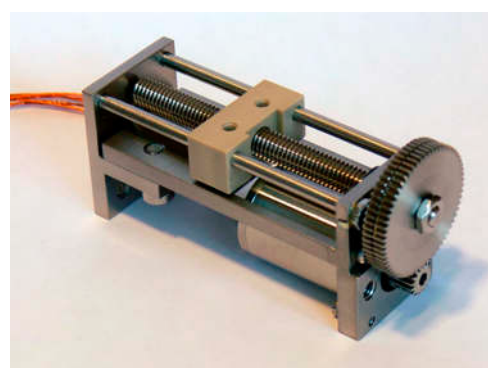
#### In-vacuum Motorised Slide X AXIS

VACUUM	TRAVEL	PART NUMBER	EURO
HV	50 mm	673-SLIDE50-HV	POR
UHV-G	50 mm	673-SLIDE50-UHVG	POR
UHV	50 mm	673-SLIDE50-UHV	POR



#### In-vacuum Motorised Slide X-Y Slide

VACUUM	TRAVEL	PART NUMBER	EURO
HV	54 mm	673-SLIDE54XY-HV	POR
UHV-G	54 mm	673-SLIDE54XY-UHVG	POR
UHV	54 mm	673-SLIDE54XY-UHV	POR



Allectra also offers an X-Y-table which can pass through a CF100 flange (102 mm  $\varnothing$  required). This slide gives 54 mm travel in both axes. Larger motors are available which give more force or higher speed for higher loads up to a maximum 500 g.

Allectra offers complete motorised assemblies ready to run, including wiring, feedthroughs and, if required, Stepper Motor Controller. Please call or e-mail Sales Office for details.

*Shielded twisted pair wires (page 64) are very suitable for In-vacuum Motor wiring. Allectra can offer wiring and Feedthroughs for In-vacuum Motors. Please call or e-mail Sales Office.*

Process Measurement and Control



**10.1 SENSOR HEADS AND ACCESSORIES**

-> Page 10.2

- Sensor Heads with water cooling, 760 mm tubes
- Bare Sensor heads
- Bakeable Fixed Sensor Head
- Sensor Head with build-in oscillator
- Single and Dual Heads with shutters



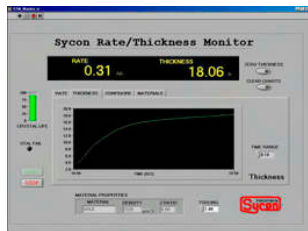
- In-vacuum Cables
- Replacement Quartz Crystals
- Tube connectors



**10.2 THIN FILM MONITORS AND CONTROLLERS**

-> Page 10.3

- Thin Film Monitors
- Thin Film Controller
- Oscillators
- Sensor Heads Complete Package including Monitor, Head, Feedthrough and Cables



**SENSOR HEAD FEEDTHROUGHS**

- refer to Section 3.10 -



**10.3 HIGH VACUUM AND UHV PRESSURE MEASUREMENT**

-> Page 10.4

- Pressure Measurement - Wide Range Gauge
- Pressure Measurement - UHV Ionisation Gauge

- 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

## Sensor Heads and Accessories

- Quartz Crystal Sensor Heads
- Bakeable Sensor Heads (up to 250°C)
- Sensor Heads with built-in oscillator
- Sensor Heads with Shutter
- Water connectors

Monitors, Controllers and complete systems - see page 10.3



710-SH



Sensor Head Feedthrough - for details refer to Sec. 3

### General Specification Sensor Head

Frequency	6MHz Quartz (Industry Standard)
Cooling	Water cooling (option: no cooling)
Max. Thickness	500 kÅ (Al)
Head Ø	30 mm
Length	adjustable from ca. 100 to 750 mm

### Sensor Heads

Water Cooled and Bare Head, max. 175°C

SENSOR	WATERLINES	PART NUMBER	EURO
LOW PROFILE	YES	710-LPSH	498,00
RIGHT ANGLE	YES	710-RASH	599,00
LOW PROFILE	NO	710-SH	434,00

### Bakeable Fixed Sensor Head Geometry to order

SENSOR	TYPE	PART NUMBER	EURO
BAKEABLE	STRIAGHT	710-BSH-XXX	POR
BAKEABLE	RT ANGLE	710-RABSH-XXX	POR

### Sensor Heads including oscillator

760 mm water connections parallel to Head

SENSOR	TYPE	PART NUMBER	EURO
LOW PROFILE	STRAIGHT	710-VSO-100	910,00

### Low Profile Sensor Heads Sensor Heads with Shutter

No OF HEADS	SHUTTERS	PART NUMBER	EURO
1	1	710-LPSH-SHUT	1.739,00
2	1 OPEN / 1 CLOSED	710-DSH-SHUT	2.097,00
-	FOR SINGLE HEAD	710-SHUTTER1	1.128,00
-	FOR DUAL HEAD	710-SHUTTER2	1.137,00

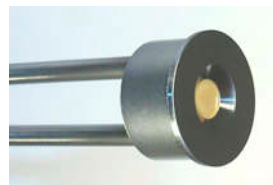
### ACCESSORIES

Swagelock-connectors / Quartz Crystals / Cables

ITEM	PART NUMBER	EURO
TUBE CONNECTOR	710-SW-32-48	14,00
QUARTZ REPLACEMENTS, 10 off	710-CRYST10	89,00
IN-VAC. CABLE 250 mm	710-IVC-250	85,00
IN-VAC. CABLE 750 mm	710-IVC-750	93,00
IN-VAC. CABLE 910 mm	710-IVC-910	119,00



The most common head: 710-LPSH



710-RASH



710-BSH-XXX

LENGTH FROM VACUUM SIDE OF FLANGE TO CENTER OF SENSING CRYSTAL TO BE SPECIFIED BY CUSTOMER.(75mm MIN TO500mm MAX)



Rear side of Sensor Head with integrated oscillator. This version allows up to 9m cable in between the Sensor Head and the Controller.



710-DSH-SHUT



In-Vacuum cable 710-IVC-750

Please contact our sales office for more details on heads with built-in oscillators and for heads with shutters!

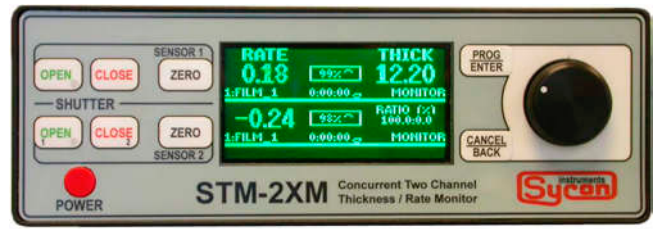
- For other In-Vacuum Microdot cables see Section 6.  
 - For Feedthroughs see Section 3.

- 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 Bi-Metal

## Thin Film Monitors / Complete Packages

Thin film Monitors display the evaporated thickness and the actual rate; they control the shutter and, with the built-in inputs and outputs they can switch on and off an evaporation source. The Controller STC-2000A is designed to be used for precise control of evaporation sources. Ramps and multi-layers can be done automatically.

For new installations, the STM-2XM Monitor is cost effective. It allows two heads be read out simultaneously.



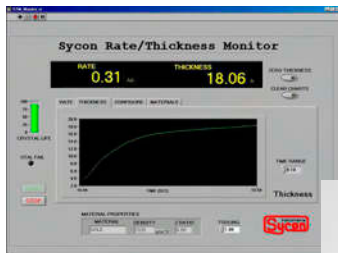
710-STM-2XM

### General Specification

	STM100-MF	STM-2XM	STM-1/2
Thickness Res.	1.0Å	0.13Å	0.13Å
Rate Resolution	0.1Å/s	0.01Å/s	0.01Å/s
Measures/sec	4	10	10
RS232	YES	YES	YES / USB
RS485	NO	YES	YES / NO
Sensors	1	2	1
Power supply	120/240V	90-240V	5VDC / USB



710-STM-100



Screenshot of the PC / Labview based read-out of STM-1 and STM-2



The compact 710-STM-2 monitor with USB connection

The complete packages contain:

- Sensor Head
- In Vacuum Cable
- 40CF feedthrough for water and signal
- Tube connectors
- Oscillator (external or included )
- Air side cables
- Monitor unit / PC Interface
- Set of replacement Quartz Crystals- 10 off

### Thin Film Monitors

Description	PART NUMBER	EURO
Monitor 1 Sensor	710-STM-100	1,892,00
Monitor 2 Sensors	710-STM-2XM	1,995,00
Labview-RS23/485	710-STM-1B	705,00
Labview-USB	710-STM-2	734,00
CONTROLLER	710-STC-2000A	3,226,00

### Thin Film Monitors COMPLETE PACKAGES including Monitor, head, feedthrough and cables

PACK TYPE	MONITOR	PART NUMBER	EURO
PACK1	STM100MF	710-PACK1	3,251,00
2XM	STM-2XM	710-PACK-2XM	3,350,00
PC	STM-1B	710-PACK-PC	1,850,00
PC	STM-2	710-PACK-USB	1,879,00

Sets	PACK1	2XM	PC	USB
Head	LPSH	LPSH	LPSH	LPSH
F/T	40CF	40CF	40CF	40CF
Cable	750 mm	750 mm	750 mm	750 mm
Oscillator	OSC-PACK	OSC-PACK	-included-	-included-
Monitor	STM100MF	STM-2XM	STM-1B	STM-2

### Oscillator Kit with Cables & 10 off Quartz Crystals

DESCRIPTION	PART NUMBER	EURO
OSCILLATOR	710-OSC	212,00
OSCILLATOR KIT	710-OSC-PACK	297,00

For the Deposition Rate Controller STC-2000A, a data sheet with full specifications is available. Please call or e-mail the Sales Office.

Extra information is available for all the monitors. Please ask for the data sheet.

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

## Wide Range Vacuum Pressure Measurement UHV Ionisation Gauge and Controller

Two different systems are offered here:

- Wide Range Compact HV/UHV System 1000 mbar down to 10<sup>-9</sup> mbar with Micro Hot Cathode Gauge
- "Classical" UHV Bare Ionisation Gauge for pressures down to 10<sup>-11</sup> mbar

Other pressure measurement systems (e.g. a Fine Vacuum gauge 1400 mbar down to 10<sup>-3</sup> mbar) are available on request. Please ask for data sheets.



### Specification Wide Range Compact Gauge

Flange	40CF (40KF on request)
Range	1000 mbar ... 10 <sup>-9</sup> mbar
Bakeable	50°C / 180°C electronic removed
Controller	LCD Display, 2 relay outputs, analogue output, RS232

### WIDE RANGE PRESSURE MEASUREMENT SYSTEM 1000 MBAR TO 10<sup>-9</sup> MBAR

DESCRIPTION	PART NUMBER	EURO
40CF gauge head	720-WRG-C40	1.350,00
Controller	720-WRC	980,00
Windows Software	720-SOFTW	110,00

Please ask for data sheet on Wide Range Pressure Measurement system.



## UHV Ionisation Gauge and Controller

The classic system with bare ion gauge and controller, 10<sup>-11</sup> mbar measurement limit

*UHV Bare Ionisation Gauge with twin Thoria coated Iridium filaments on 40CF flange*



### Pressure Measurement UHV Ionisation Gauge 10<sup>-3</sup> mbar to 10<sup>-11</sup> mbar

FLANGE	FILAMENT	PART NUMBER	EURO
40CF	2 x W	720-IG-W	520,00
40CF	2 x Th(Ir)	720-IG-TH	585,00

### Pressure Measurement Pirani Gauge 1000mbar to 10<sup>-3</sup> mbar

FLANGE	TYPE	PART NUMBER	EURO
16KF	Pirani	720-PIR	POR

### Pressure Measurement UHV Controller and Cables

DESCRIPTION		PART NUMBER	EURO
Controller	for 1 Gauge	720-IGC-1	POR
Controller	for 2 Gauges	720-IGC-2	POR
Cable, 3m	bakeable	720-IG-CAB3	POR
Cable, 6m	bakeable	720-IG-CAB6	POR
Cable, 9m	bakeable	720-IG-CAB9	POR

A wide range of Pressure Measurement Options are available for the Ion Gauge Controller including:

- Module for VG Pirani head
- Thermocouple input for bakeout control

Please ask for the Data Sheet.



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



**11.5 CF FITTINGS -> Page 11.9**

- 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



**11.6 CF EDGE WELDED BELLOWS -> Page 11.13**

- CF Edge Welded Bellows - 316L Stainless Steel

**11.7 CF FLEXIBLE HOSES AND FLEXIBLE COUPLINGS -> Page 11.14**

- 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:

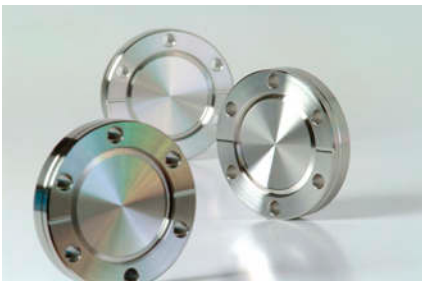
- High Corrosion Resistance
- Good welding characteristics
- No softening (loss of knife edge hardness) at high temperatures.

### General Specification CF Flanges

Vacuum	UHV to 10 <sup>-12</sup> 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 <sup>-12</sup> 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
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- 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 <sup>-12</sup> 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  
 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
- 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 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.



#### 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

#### 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 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 <sup>-12</sup> 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

Alliectra 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

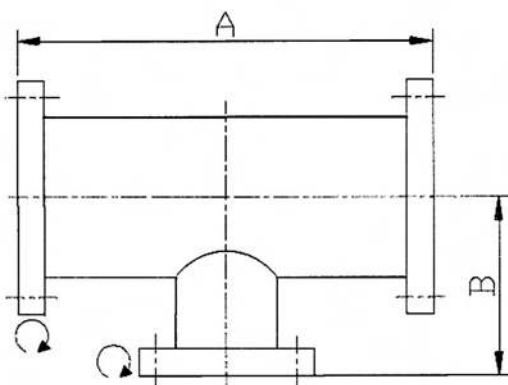
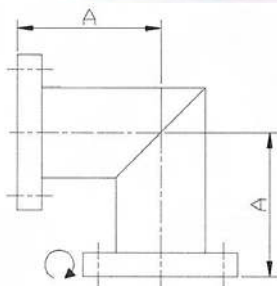
#### CF REDUCING TEE PIECE 316L Stainless Steel

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
- 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 4 Way Crosses**

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

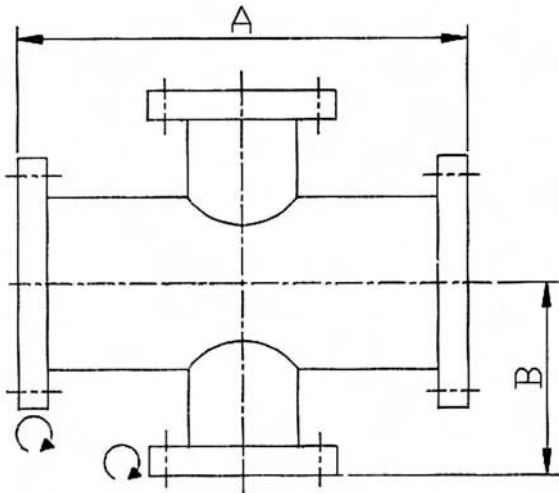
Special Fittings built to Order:

- 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 <sup>-12</sup> 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
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
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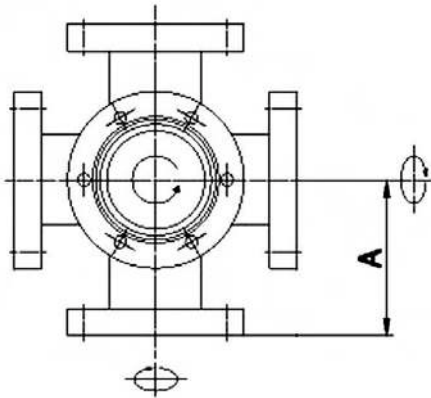
### CF 6 Way Crosses

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.

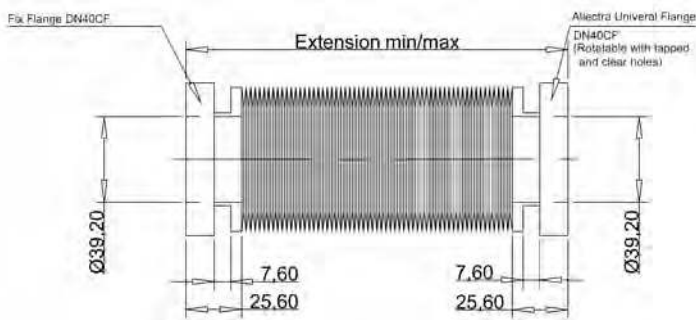


### General Specification Edge Welded Bellows

Vacuum	UHV to 10 <sup>-12</sup> 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.



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

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

- 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 Flexible Hoses

### CF Flexible Couplings

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

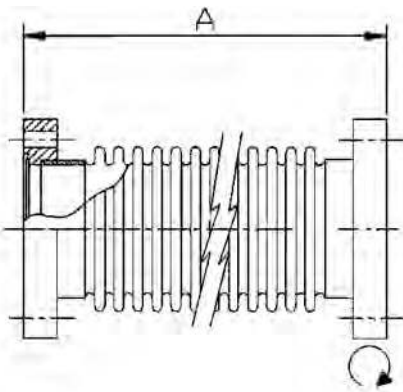
They are used, for example, as pumping lines.

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

- 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

KF Vacuum Hardware



**12.1 KF CLAMPS AND CENTRING RINGS**

-> Page 12.2

- KF Clamps - Standard Aluminium type with Wingnut
- KF Clamps - QUICK clamps with lever action
- KF Centring Ring - ALUMINIUM with VITON O-Ring
- KF Centring Ring - Stainless Steel with VITON O-Ring
- KF Centring Ring - OUTER TYPE with Viton O-Ring
- KF Centring Ring - REDUCER RING Aluminium with Viton O-Ring



**12.2 KF FITTINGS**

-> Page 12.3

- KF Flange - ALUMINIUM
- KF Flange - Stainless Steel
- KF Flange with Tube - SHORT - Stainless Steel
- KF Flange with Tube - LONG - Stainless Steel
- KF Spare O-Rings



- KF Straight Connector - Stainless Steel
- KF Conical Reducers - Stainless Steel
- KF Elbows - Stainless Steel
- KF Tee Pieces - Stainless Steel
- KF Reducing Tee Pieces - Stainless Steel

- KF 4 Way Crosses - Stainless Steel
- KF 6 Way Crosses - Stainless Steel



- KF Transparent Viewflange - Including O-Ring and clamp
- KF Mesh Protection Centring ring and O-Ring - Stainless Steel / Viton

**12.3 KF FLEXIBLE HOSES**

-> Page 12.6

- KF Flexible Hoses - Stainless Steel
- KF Flexible Hoses with protective braid



**12.4 EVAC CLAMPS AND FITTINGS**

-> Page 12.8



- 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

# 12.2 KF CLAMPS/ CENTRING RINGS

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## KF Clamps

The Standard Clamp is made of Aluminium with a wing nut. Quick Action Clamps have a quick release lever action.

## KF Centring Rings

Standard Centring Rings consist of an Inner Aluminium or Stainless Steel carrier with a Viton O Ring. Outer Centring Rings leave the full inner diameter of the Flange free. They are easier to use than the conventional type and can be used equally with DN10/ 16, DN20/ 25 or DN32/ 40 Flanges instead of the Adaptor Centring Rings.



### KF Clamps STANDARD Aluminium type with Wingnut

FLANGE	THICKNESS	PART NUMBER	EURO
10/16KF	16	431-KF16-C	3,50
20/25KF	16	431-KF25-C	4,00
32/40KF	16	431-KF40-C	5,00
50KF	25	431-KF50-C	10,00

### KF Clamps QUICK CLAMPS with lever action

FLANGE	THICKNESS	PART NUMBER	EURO
10/16KF	16	431-KF16-CQ	10,00
20/25KF	16	431-KF25-CQ	12,00
32/40KF	16	431-KF40-CQ	14,00
50KF	25	431-KF50-CQ	POR

### KF Centring Ring ALUMINIUM with Viton O-Ring

FLANGE	THICKNESS	PART NUMBER	EURO
10KF	8	431-KF10-CR-AV	3,50
16KF	8	431-KF16-CR-AV	3,50
25KF	8	431-KF25-CR-AV	4,50
40KF	8	431-KF40-CR-AV	6,00
50KF	8	431-KF50-CR-AV	8,00

### KF Centring Ring STAINLESS STEEL with Viton O-Ring

FLANGE	THICKNESS	PART NUMBER	EURO
10KF	8	431-KF10-CR-SV	4,00
16KF	8	431-KF16-CR-SV	4,00
25KF	8	431-KF25-CR-SV	4,80
40KF	8	431-KF40-CR-SV	6,20
50KF	8	431-KF50-CR-SV	9,00

### KF Centring Ring OUTER TYPE with Viton O-Ring

FLANGE	THICKNESS	PART NUMBER	EURO
10/16KF	7	431-KF16-CR-EX	6,50
20/25KF	7	431-KF25-CR-EX	7,50
32/40KF	7	431-KF40-CR-EX	8,50
50KF	7	431-KF50-CR-EX	12,00

### KF Centring Ring ADAPTOR RING Aluminium with Viton O-Ring

FLANGE	THICKNESS	PART NUMBER	EURO
10/16KF	7	431-KF16-10-CR	6,00
20/25KF	7	431-KF25-20-CR	6,50
32/40KF	7	431-KF40-32-CR	9,00

### General Specification 431-KFXX-C

Vacuum Material      High Vacuum Aluminium



431-KF25-CQ

For overpressure applications, please use EVAC CHAIN CLAMPS. Together with Aluminium metal seals a pressure range from 10<sup>-11</sup> mbar to 300 bar is possible! See separate EVAC catalogue or contact the Sales Office.



431-KF40-CR-EX

For electrical insulation, polymere clamps and O-Rings with PTFE centring rings are available. Please call or e-mail the Sales Office.

Adaptor Centring Rings can be used to couple together a DN10KF Flange to a DN16KF Flange. As an alternative, Outer Centring Rings can be used in the same way.

- 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

**KF Flanges Aluminium & Stainless Steel**

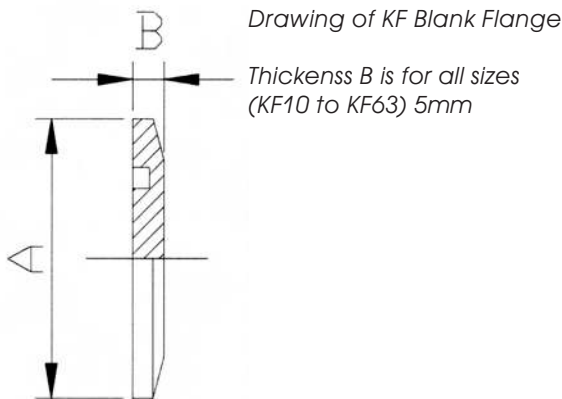
**KF Flanges with Tube**

**KF Spare Viton O-Rings**



**General Specification KF Fittings**

Vacuum	High Vacuum UHV (10 <sup>-10</sup> mbar) with metal seals
Overpressure	Up to 300 bars with special components, ask Sales Office
Materials	Aluminium or Stainless Steel 316L, Glass and Quartz on request



63KF is a special version from EVAC. It is significantly smaller than a 63 ISO-K flange and allows fast and easy closing with Chain Clamps.



Various Viton O-Rings with Inner and Outer Centring Rings

**KF Flange ALUMINIUM**

FLANGE	A (mm)	PART NUMBER	EURO
10KF	30	431-KF10-B-AL	5,00
16KF	30	431-KF16-B-AL	5,00
25KF	40	431-KF25-B-AL	5,50
40KF	55	431-KF40-B-AL	6,50
50KF	75	431-KF50-B-AL	11,00

**KF Flange STAINLESS STEEL**

FLANGE	A (mm)	PART NUMBER	EURO
10KF	30	431-KF10-B	4,50
16KF	30	431-KF16-B	4,50
25KF	40	431-KF25-B	5,50
40KF	55	431-KF40-B	6,50
50KF	75	431-KF50-B	12,00
63KF	87	E32.063003.120.563	POR

**KF Flange with Tube SHORT STAINLESS STEEL**

FLANGE	LENGTH	PART NUMBER	EURO
10KF	30	433-KF10-TS	9,00
16KF	30	433-KF16-TS	10,00
25KF	30	433-KF25-TS	12,00
40KF	30	433-KF40-TS	20,00
50KF	30	433-KF50-TS	30,00
63KF	30	E32.063005.111.363	POR

**KF Flange with Tube LONG STAINLESS STEEL**

FLANGE	LENGTH	PART NUMBER	EURO
10KF	70	433-KF10-T	18,00
16KF	70	433-KF16-T	18,00
25KF	70	433-KF25-T	20,00
40KF	70	433-KF40-T	26,00
50KF	70	433-KF50-T	41,00
63KF	60	E32.063005.112.363	POR

**KF Replacement O-Rings VITON**

FLANGE	No PER PKT.	PART NUMBER	EURO
10KF	5	431-KF10-O	6,00
16KF	5	431-KF16-O	6,00
25KF	5	431-KF25-O	8,00
40KF	5	431-KF40-O	9,00
50KF	5	431-KF50-O	13,00
63KF	5	431-KF63-O	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

### KF Straight Connectors

### KF Tee Pieces and Reducing Tees

### KF Elbows

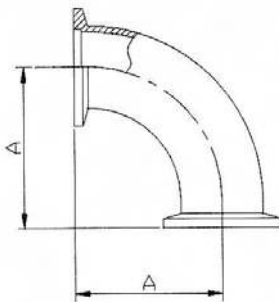
### KF Conical Reducers

Non standard length fittings and special versions can be built to order.  
 Conical Reducers provide a high conductivity solution for matching different Flange sizes



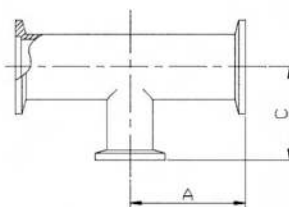
#### Specification KF Fittings

Vacuum	High Vacuum UHV ( $10^{-10}$ mbar) with metal seals
Overpressure	Up to 300 bars with special components, ask Sales Office
Materials	Stainless Steel Aluminium, SS 316L, Glass and Quartz on request

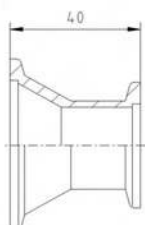


dimensions of Elbow

Aluminium components are available, they are manufactured in one piece without weld



dimensions of Reducing Tee



Conical Reducer

#### KF Straight Connectors STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER	EURO
10KF	70	433-KFX2-10	25,00
16KF	70	433-KFX2-16	25,00
25KF	70	433-KFX2-25	34,00
40KF	70	433-KFX2-40	48,00
50KF	70	433-KFX2-50	56,00
63KF	176	E33.063003.111.563	POA

#### KF Elbows STAINLESS STEEL

FLANGE	A	PART NUMBER	EURO
10KF	70	433-KFL-10	38,00
16KF	70	433-KFL-16	38,00
25KF	70	433-KFL-25	38,00
40KF	70	433-KFL-40	43,00
50KF	70	433-KFL-50	60,00
63KF	88	E33.063003.150.563	POR

#### KF Tee Pieces STAINLESS STEEL

FLANGE	B	PART NUMBER	EURO
10KF	60	433-KFX3-10	42,00
16KF	80	433-KFX3-16	44,00
25KF	100	433-KFX3-25	46,00
40KF	130	433-KFX3-40	60,00
50KF	140	433-KFX3-50	90,00
63KF	176	E33.063003.160.563	POR

#### KF REDUCING Tee Pieces STAINLESS STEEL

FLANGE	A/C	PART NUMBER	EURO
25KF/16KF	50/40	433-KFX3-25-16	60,00
40KF/16KF	65/40	433-KFX3-40-16	75,00
40KF/25KF	65/50	433-KFX3-40-25	75,00
50KF/25KF	70/50	433-KFX3-50-25	90,00
50KF/40KF	70/65	433-KFX3-50-40	110,00

#### KF Conical Reducers STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER	EURO
25KF/16KF	40	433-KCR25-16	30,00
40KF/16KF	40	433-KCR40-16	35,00
40KF/25KF	40	433-KCR40-25	38,00
50KF/25KF	40	433-KCR50-25	60,00
50KF/40KF	40	433-KCR50-40	66,00
63KF/50KF	40	E33.063003.140.365	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



**KF 4 and 6 Way Crosses**

**KF Transparent Viewport Flange**

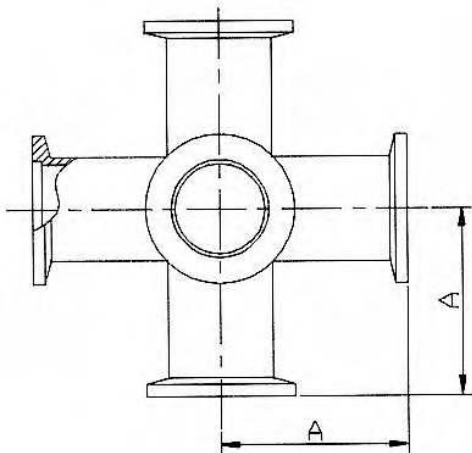
**KF Mesh Protective Centring Ring**

Standard 4 and 6 way Crosses are shown  
 Optionally Crosses can be built to order with custom port length and any required Flanges  
 Transparent Flanges offer a low cost Viewport solution  
 Mesh Centring Rings prevent the passage of unwanted particles.



**Specification KF Crosses**

Vacuum	High Vacuum UHV (10 <sup>-10</sup> mbar) with metal seals
Overpressure	Up to 300 bars with special components, ask Sales Office
Materials	Stainless Steel Aluminium, SS 316L, Glass and Quartz on request



433-KFX6-25

Transparent flanges are also available in Quartz. For over-pressure special metal sealed versions are available.



431-KF25-MESH-SV

**KF 4 Way Crosses  
STAINLESS STEEL**

FLANGE	A	PART NUMBER	EURO
16KF	40	433-KFX4-16	50,00
25KF	50	433-KFX4-25	59,00
40KF	65	433-KFX4-40	85,00
50KF	70	433-KFX4-50	132,00
63KF	88	E33.063003.170.563	POR

**KF 6 Way Crosses  
STAINLESS STEEL**

FLANGE	A	PART NUMBER	EURO
16KF	40	433-KFX6-16	120,00
25KF	50	433-KFX6-25	135,00
40KF	65	433-KFX6-40	165,00
50KF	70	433-KFX6-50	220,00

**KF Transparent Viewflange  
Including O-Ring and clamp**

FLANGE	VIEW DIAM	PART NUMBER	EURO
16KF	16	120-VPGFS-K16	44,00
25KF	25	120-VPGFS-K25	57,00
40KF	40	120-VPGFS-K40	64,00
50KF	50	120-VPGFS-K50	79,00
63KF	63	120-VPGFS-K63	POR

**KF Mesh Protection Centering-Ring and O-Ring  
STAINLESS STEEL/ Viton**

FLANGE	MESH	PART NUMBER	EURO
16KF	0.02 mm	431-KF16-MESH-SV	23,00
25KF	0.02 mm	431-KF25-MESH-SV	28,00
40KF	0.02 mm	431-KF40-MESH-SV	39,00
50KF	0.02 mm	431-KF50-MESH-SV	49,00

- 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

### KF Flexible Stainless Steel Hoses

Hydraulically Formed Flexible Bellows are ideal for applications such as connecting pumps to vacuum systems.

- Suitable for wide temperature range (-270°C to + 200°C)
- Absorbs vibration and noise from pumps etc.
- Compensates for thermal expansion or contraction of piping.
- Corrects misalignment problems
- A flexible and quick alternative for rigid piping in difficult locations.



#### Specification KF Flexible Hoses

Vacuum Temp. Range	High Vacuum -270°C ... 700°C for bellows (limited by flange / seal)
Material	Stainless Steel 316L
Recommended Min. Bend Radius	
DN16	160 mm
DN25	190 mm
DN40	300 mm
DN50	320 mm

#### KF Flexible Hoses 316L Stainless Steel

FLANGE	LENGTH	PART NUMBER	EURO
16KF	250	452-HOSE-K16-0250	30,00
16KF	500	452-HOSE-K16-0500	33,00
16KF	1000	452-HOSE-K16-1000	44,00
16KF	2000	452-HOSE-K16-2000	67,00
25KF	500	452-HOSE-K25-0500	43,00
25KF	1000	452-HOSE-K25-1000	57,00
25KF	2000	452-HOSE-K25-2000	81,00
40KF	500	452-HOSE-K40-0500	68,00
40KF	1000	452-HOSE-K40-1000	89,00
40KF	2000	452-HOSE-K40-2000	135,00
50KF	500	452-HOSE-K50-0500	90,00
50KF	1000	452-HOSE-K50-1000	110,00
50KF	2000	452-HOSE-K50-2000	154,00



#### Flexible Hoses - Tube Termination - Unflanged 316L Stainless Steel

NOM. SIZE	LENGTH	PART NUMBER	EURO
DN16	500	452-HOSE16-0500	30,00
DN16	1000	452-HOSE16-1000	39,00
DN16	2000	452-HOSE16-2000	50,00
DN25	500	452-HOSE25-0500	40,00
DN25	1000	452-HOSE25-1000	47,00
DN25	2000	452-HOSE25-2000	70,00
DN40	500	452-HOSE40-0500	64,00
DN40	1000	452-HOSE40-1000	75,00
DN40	2000	452-HOSE40-2000	101,00
DN50	500	452-HOSE50-0500	85,00
DN50	1000	452-HOSE50-1000	105,00
DN50	2000	452-HOSE50-2000	130,00

### Tube Termination (Unflanged) Hoses

Hoses with standard tube terminations are offered in a range of sizes and lengths. Allectra can fit Flanges of various types to these Hoses as required. Tube Hoses can be fitted with mixtures of KF size Flanges or with different Flange types on each end e.g. 16KF to 16CF.

Also custom lengths are available. Please call Sales Office

- 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

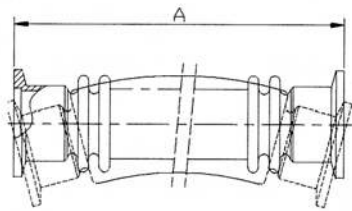
**KF Braided Flexible Hoses and KF PVC Hose**

Braided Flexible Hoses are the same construction as KF Flexible Connectors but with an outer Stainless Steel Flexible Braid which protects the Hose. Flexible Hoses often run in exposed positions and these Braided Hoses are recommended for safety. If used with correct gaskets and Chain Clamps, these hoses can be used for over-pressure.

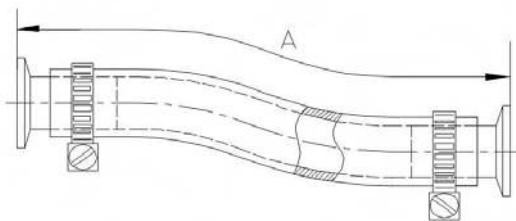
For a low cost alternative to Flexible Hoses, Allectra offers PVC Hose.

**Specification 452-BHOSE**

Vacuum	High Vacuum
Hose Materials	Stainless steel
Outer Braid	Plaited Stainless Steel
Min.Bend radius	16KF: 70mm 25KF: 100mm 40KF: 130mm 50KF: 200mm 63KF: 300mm



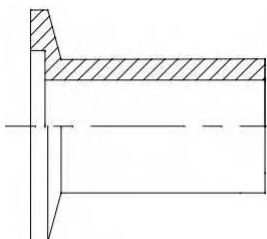
452-BHOSE-K40-0500



452-PVC-KF25-0500

**Specification Flexible Coupling**

Vacuum	High Vacuum
Hose Materials	Stainless steel
Type	Thin Wall High Flexible bellow
Travel	+/-5mm (KF16 / KF25) +/-10mm (KF40)



**KF Braided Flexible Connectors  
STAINLESS STEEL**

FLANGE	LENGTH	PART NUMBER	EURO
16KF	500	452-BHOSE-K16-0500	126,00
16KF	1000	452-BHOSE-K16-1000	140,00
25KF	500	452-BHOSE-K25-0500	150,00
25KF	1000	452-BHOSE-K25-1000	175,00
40KF	500	452-BHOSE-K40-0500	190,00
40KF	1000	452-BHOSE-K40-1000	220,00
50KF	500	452-BHOSE-K50-0500	POR
50KF	1000	452-BHOSE-K50-1000	POR
63KF	500	E35.063086.112.363	POR
63KF	1000	E35.063086.114.363	POR

**KF PVC Hose  
PVC with Steel Spiral**

FLANGE	LENGTH	PART NUMBER	EURO
16KF	500	452-PVC-K16-0500	32,00
16KF	1000	452-PVC-K16-1000	37,50
25KF	500	452-PVC-K25-0500	40,00
25KF	1000	452-PVC-K25-1000	47,50
40KF	500	452-PVC-K40-0500	65,00
40KF	1000	452-PVC-K40-1000	77,50
50KF	500	452-PVC-K50-0500	119,00
50KF	1000	452-PVC-K50-1000	132,00

**KF Flexible Coupling  
High-Flexibility**

FLANGE	LENGTH	PART NUMBER	EURO
16KF	60+/-5	452-KFX2-16-BEL	72,00
25KF	60+/-5	452-KFX2-25-BEL	83,00
40KF	120+/-10	452-KFX2-40-BEL	108,00

**KF Flange for PVC Hose  
ALUMINIUM**

FLANGE	FOR HOSE ID	PART NUMBER	EURO
16KF	16	452-HF16-K16-AL	15,00
25KF	25	452-HF25-K25-AL	17,00
40KF	40	452-HF40-K40-AL	19,00

- 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

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  
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 15 HV / UHV Chambers  
 16 Atlas Bi-Metal

## EVAC Chain-Clamps and Fittings



EVAC offers a large variety of special flanges. Here a short overview. **Please ask for a complete EVAC catalogue.**

### KF:

- KF Flanges in Stainless Steel 304 and 316L
- KF Aluminium components
- KF Flanges and Components like Crosses etc. in Glass (Duran) and Quartz, "EVAC Glass TM"
- KF in the size 63KF
- Metal seals for KF which allow the UHV use of KF components
- Extended temperature range -270°C to 300°C
- High quality Chain Clamps for overpressure applications up to 20 bar



Glass components with Chain-Clamp

### ISO:

- EVAC ISO tapered flanges with flats for fast Chain-Clamp closure
- Extended vacuum range down to  $10^{-11}$  mbar
- Extended temperature range -270°C to 300°C
- Various Chain-Clamps from "Low Cost" to "High Pressure" Versions for up to 100 bar
- Glass flanges and components up to ISO-160 size



Chain-Clamps for ISO-K 63

### CeFIX® Flanges:

An all-metal seal flange system without knife edge. Lower sealing force and reusable gaskets are the highlights of this design

- Sizes from NW16 to NW250
- Gaskets compatible with standard CF flange system
- Gaskets reusable up to 10 times
- Seals in Copper, Silver plated Copper, Aluminium, Nickel
- Overpressure up to 100 bar with appropriate Chain-Clamps
- Temperature range -270°C to 300°C



CeFIX Flanges with Gasket

### sTeRlIC Clamp™:

- Ideal Flange system for biotech, food industry and pharmacy
- Can be sterilized, including Chain-Clamp
- Wide temperature range -200 to +200°C
- Pressure range  $10^{-7}$  mbar up to 10 bar



sTeRlIC Clamp Flange, closed with an all metal Chain-Clamp

Allectra is an authorised Distributor for EVAC products.

ISO Flange System



**13.1 ISO CLAMPS AND GASKETS**

-> Page 13.2

- ISO Double Claw Clamps - Zinc plated Steel
- ISO Double Claw Clamps - Stainless Steel
- ISO Single Claw Clamps - Zinc plated Steel
- ISO Single Claw Clamps - Stainless Steel



**ISO CENTRING RING WITH O-RING**

- ISO Centring Ring with O-Ring - Aluminium/ Viton
- ISO Centring Ring with O-Ring - Stainless Steel/ Viton

**ISO BLANKFLANGES - STAINLESS STEEL**

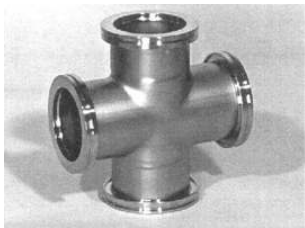
- ISO-K Blank Flanges
- ISO-F Rotatable Bolt Rings
- ISO-F Bolt Sets for joining to Tapped Flanges



**13.2 ISO-K VIEWPORT & FITTINGS**

-> Page 13.5

- ISO-K Viton O-Ring sealed Viewports - Borosilicate Glass in Stainless Steel Holder
- ISO-K Flange with tube - Stainless Steel
- ISO-K Conical Reducer - Stainless Steel



**ISO-K FITTINGS - STAINLESS STEEL**

- ISO-K Straight Connector
- ISO-K Elbow
- ISO-K Tee Piece
- ISO-K Reducing Tee Piece



**13.3 ISO-K 4- AND 6-WAY-CROSSES**

-> Page 13.7

- ISO-K 4 Way Cross - TUBE Construction
- ISO-K 4 Way Cross - SPHERE Construction
- ISO-K 6 Way Cross - TUBE Construction
- ISO-K 6 Way Cross - SPHERE Construction



**ISO SPARE O-RINGS AND FLEXIBLE COUPLINGS**

- ISO Spare O-Ring - Viton
- ISO Flexible Bellows Connector - Stainless Steel

- 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
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- 13 ISO-K Hardware
- 14 Adaptors Specials
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- 16 Atlas Bi-Metal

## ISO Clamps and Gaskets

From size DN63 to size DN630, the ISO Norm 1609 specifies a series of Large Vacuum Flanges which are sealed with elastomer seals. These are called ISO-K Flanges or sometimes LF (Large Flanges). They are suitable for elevated temperatures up to 200°C for brief periods and 150°C for continuous operation. ISO-K flanges are sealed with Double Claw Clamps. Alternatively compatible Bolt Flanges are available. The Bolt Flanges are called ISO-F and can be used with ISO-K by means Single Claw Clamps.

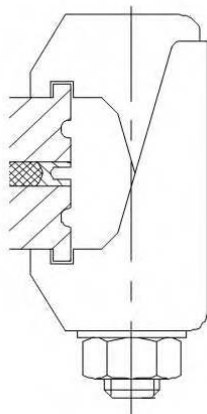


### Specification Claw Clamps

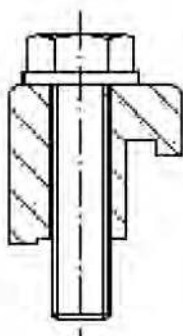
Vacuum	High Vacuum
Materials	Stainless Steel, Zinc plated Steel
Thread Sizes	see Table

Size	Minimum No. of Clamps	Thread* (SCC)
ISO-K 63	4	M8
ISO-K 100	4	M8
ISO-K 160	4	M10
ISO-K 200	6	M10
ISO-K 250	6	M10
ISO-K 320	8	M12
ISO-K 400	8	M12
ISO-K 500	12	M12
ISO-K 630	12	M12

\* Thread in ISO-F flanges for Single claw clamps.



441-DCC



441-SCC

### ISO Double Claw Clamps ZINC PLATED STEEL

FLANGE	TYPE	PART NUMBER	EURO
63-250 ISO-K	DOUBLE	441-DCC-063-250-S	4,50
320-500 ISO-K	DOUBLE	441-DCC-320-500-S	6,00

### ISO Double Claw Clamps STAINLESS STEEL

FLANGE	TYPE	PART NUMBER	EURO
63-250 ISO-K	DOUBLE	441-DCC-063-250-SS	11,00
320-630 ISO-K	DOUBLE	441-DCC-320-630-SS	16,00

### ISO Single Claw Clamps ZINC PLATED STEEL

FLANGE	TYPE	PART NUMBER	EURO
63-100 ISO-K	SINGLE	441-SCC-063-100-S	3,50
160-250 ISO-K	SINGLE	441-SCC-160-250-S	4,00
320-500 ISO-K	SINGLE	441-SCC-320-500-S	5,50

### ISO Single Claw Clamps STAINLESS STEEL

FLANGE	TYPE	PART NUMBER	EURO
63-100 ISO-K	SINGLE	441-SCC-063-100-SS	7,00
160-250 ISO-K	SINGLE	441-SCC-160-250-SS	8,00
320-500 ISO-K	SINGLE	441-SCC-320-500-SS	12,00
630 ISO-K	SINGLE	441-SCC-630-SS	14,00

- 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
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- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

**ISO Centring Ring with O-Ring**

Allectra Centring Rings have Aluminium or Stainless Steel Carriers with Viton O-Rings as standard. NBR (Buna) O-Ring with Aluminium Carrier are available on request. The Centring Ring consists of an Inner Stainless Steel or Aluminium Ring, a Viton O-Ring. If required an Outer Ring is available as an option. Allectra can deliver High Temperature Viton O-Rings for continuous use up to 200°C!

**General Specification Centring Ring**

Viton O-Ring	
Max. Temp.	200°C
Continuous	150°C
NBR (Buna) O-Ring	
Max. Temp.	100°C
Continuous	80°C



ISO Centring ring with optional outer ring. The outer ring is aluminium for all types.



**ISO Centring Ring with O-Ring ALUMINIUM/ Viton**

FLANGE	TYPE	PART NUMBER	EURO
63 ISO	AI/VITON	441-ISO63-CR-AV	17,00
100 ISO	AI/VITON	441-ISO100-CR-AV	21,00
160 ISO	AI/VITON	441-ISO160-CR-AV	25,00
200 ISO	AI/VITON	441-ISO200-CR-AV	32,00
250 ISO	AI/VITON	441-ISO250-CR-AV	57,00
320 ISO	AI/VITON	441-ISO320-CR-AV	87,00
400 ISO	AI/VITON	441-ISO400-CR-AV	110,00
500 ISO	AI/VITON	441-ISO500-CR-AV	141,00
630 ISO	AI/VITON	441-ISO630-CR-AV	197,00

**ISO Centring Ring with O-Ring ALUMINIUM/ Viton WITH OUTER RING**

FLANGE	TYPE	PART NUMBER	EURO
63 ISO	AI/VITON	441-ISO63-CR-AV-OR	19,00
100 ISO	AI/VITON	441-ISO100-CR-AV-OR	28,00
160 ISO	AI/VITON	441-ISO160-CR-AV-OR	POR
200 ISO	AI/VITON	441-ISO200-CR-AV-OR	POR
250 ISO	AI/VITON	441-ISO250-CR-AV-OR	POR

**ISO Centring Ring with O-Ring STAINLESS STEEL/ Viton**

FLANGE	TYPE	PART NUMBER	EURO
63 ISO	SS/VITON	441-ISO63-CR-SV	22,00
100 ISO	SS/VITON	441-ISO100-CR-SV	33,00
160 ISO	SS/VITON	441-ISO160-CR-SV	45,00
200 ISO	SS/VITON	441-ISO200-CR-SV	66,00
250 ISO	SS/VITON	441-ISO250-CR-SV	80,00
320 ISO	SS/VITON	441-ISO320-CR-SV	POR
400 ISO	SS/VITON	441-ISO400-CR-SV	POR
500 ISO	SS/VITON	441-ISO500-CR-SV	POR
630 ISO	SS/VITON	441-ISO630-CR-SV	POR

**ISO Centring Ring with O-Ring STAINLESS STEEL/ Viton WITH OUTER RING**

FLANGE	TYPE	PART NUMBER	EURO
63 ISO	SS/VITON	441-ISO63-CR-SV-OR	24,00
100 ISO	SS/VITON	441-ISO100-CR-SV-OR	40,00
160 ISO	SS/VITON	441-ISO160-CR-SV-OR	POR
200 ISO	SS/VITON	441-ISO200-CR-SV-OR	POR
250 ISO	SS/VITON	441-ISO250-CR-SV-OR	POR

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
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- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
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- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

# 13.4 ISO BLANK FLANGES

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## ISO Blank flanges

Size from 63 ISO-K to size 630 ISO-K are available.

Allectra offers:

- Blank Flanges
- Weld Flanges to order
- ISO Rotatable Bolt Rings to convert ISO-K Clamp Flanges to ISO-F Bolt Flanges.

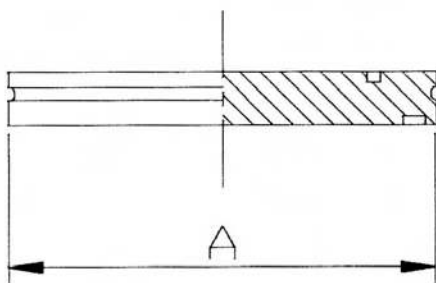
ISO-F (LF Bolt Flanges) available on request.

Aluminium ISO-K Flanges are available to order.

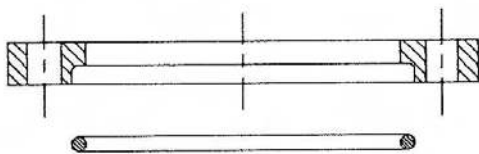


### General Specification ISO Blank Flanges

Vacuum	to 10 <sup>-9</sup> mbar
Materials	Stainless Steel (Aluminium optional)
Flange thickness	12mm (63-250) 17mm (320-500) 22mm (630)



ISO-K Blank Flange.  
 For dimensions, please ask for data sheet.



Rotatable Bolt Ring converts an ISO-K to an ISO-F Bolt type flange.  
 For dimensions, please ask for data sheet.

### ISO-K Blank Flanges STAINLESS STEEL

FLANGE	A (mm)	PART NUMBER	EURO
63 ISO-K	95	441-ISO63-B	40,00
100 ISO-K	130	441-ISO100-B	52,00
160 ISO-K	180	441-ISO160-B	87,00
200 ISO-K	240	441-ISO200-B	158,00
250 ISO-K	290	441-ISO250-B	183,00
320 ISO-K	370	441-ISO320-B	322,00
400 ISO-K	450	441-ISO400-B	437,00
500 ISO-K	550	441-ISO500-B	625,00
630 ISO-K	690	441-ISO630-B	1.062,00

ISO-K WELD FLANGES Please call Sales Office

### ISO-F Rotatable Bolt Rings including Retaining Ring

FLANGE	OD (mm)	PART NUMBER	EURO
63 ISO-F	130	441-ISO63-COL	45,00
100 ISO-F	165	441-ISO100-COL	65,00
160 ISO-F	225	441-ISO160-COL	130,00
200 ISO-F	285	441-ISO200-COL	175,00
250 ISO-F	335	441-ISO250-COL	210,00
320 ISO-F	425	441-ISO320-COL	285,00
400 ISO-F	510	441-ISO400-COL	435,00
500 ISO-F	610	441-ISO500-COL	645,00
630 ISO-F	750	441-ISO630-COL	1.050,00

### ISO-F Bolt Sets for joining to Tapped Flanges STAINLESS STEEL - Packets of 25

FLANGE	No PER PACK	PART NUMBER	EURO
63 ISO-F	M8-20	411-M8X20	17,00
100 ISO-F	M8-20	411-M8X20	17,00
160 ISO-F	M10-30	411-M10X30	35,00
200 ISO-F	M10-30	411-M10X30	35,00
250 ISO-F	M10-30	411-M10X30	35,00
320 ISO-F	M12-40	411-M12X40	52,00
400 ISO-F	M12-40	411-M12X40	52,00
500 ISO-F	M12-40	411-M12X40	52,00
630 ISO-F	M12-40	411-M12X40	52,00

Note: Longer bolts for use with 2 bolt flanges on request

Size	No. Boltholes	Thread
ISO-F 63	4	M 8
ISO-F 100	8	M 8
ISO-F 160	8	M10
ISO-F 200	12	M10
ISO-F 250	12	M10
ISO-F 320	16	M12
ISO-F 400	16	M12
ISO-F 500	24	M12
ISO-F 630	24	M12

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## ISO-K Viewports, Flanges with Tube and Conical Reducers

- ISO Viewports
- ISO Bored Flanges with Tube
- ISO Conical Reducers

For fittings from DN 320 ISO-K to DN630 ISO-K please call Sales Office.

Custom made fittings on request.

### Specification O-Ring Sealed Viewports

Vacuum	to 10 <sup>-9</sup> mbar
Material	Stainless Steel, Viton O-Ring
Viewport Material	Borosilicate Glass

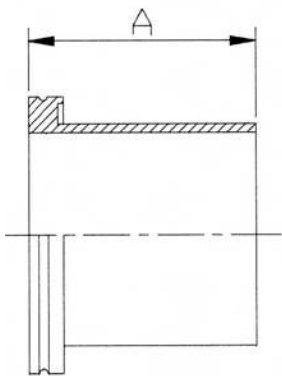


### ISO-K Viton O-Ring Sealed Viewports Borosilicate Glass in Stainless Steel Holder

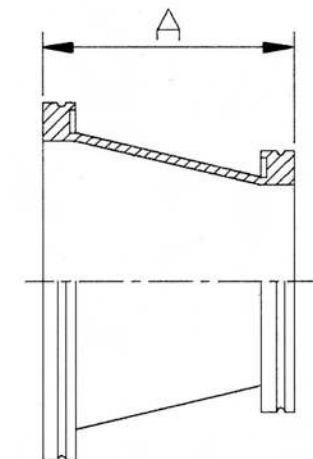
FLANGE	VIEW Ø	PART NUMBER	EURO
63 ISO-K	72	120-VPGO-ISO63	150,00
100 ISO-K	104	120-VPGO-ISO100	228,00
160 ISO-K	152	120-VPGO-ISO160	385,00
200 ISO-K	210	120-VPGO-ISO200	689,00



120-VPGO-ISO063 ISO-K Viewport



441-ISO063-TU  
ISO-K Flange with Tube.  
Length A for all sizes is 100mm.  
For full dimensions, please ask for ISO Fittings data sheet



441-ISO100-63-CR ISO-K Conical Reducer  
For length A see product table

### ISO-K Flange with tube STAINLESS STEEL

FLANGE	OD/ ID	PART NUMBER	EURO
63 ISO-K	76/70	441-ISO63-TU	70,00
100 ISO-K	108/102	441-ISO100-TU	95,00
160 ISO-K	159/153	441-ISO160-TU	145,00
200 ISO-K	219/213	441-ISO200-TU	203,00
250 ISO-K	267/261	441-ISO250-TU	240,00
320 ISO-K	324/318	441-ISO320-TU	380,00
400 ISO-K	408/400	441-ISO400-TU	490,00
500 ISO-K	508/500	441-ISO500-TU	690,00
630 ISO-K	660/650	441-ISO630-TU	1.200,00

### ISO-K Conical Reducer STAINLESS STEEL

FLANGE	LENGTH A	PART NUMBER	EURO
100/ 63 ISO-K	100 mm	441-ISO100-63-CR	180,00
160/100 ISO-K	120 mm	441-ISO160-100-CR	255,00
200/160 ISO-K	140 mm	441-ISO200-160-CR	395,00
250/200 ISO-K	160 mm	441-ISO250-200-CR	510,00

### ISO-K Fittings

- 90° Elbows
- Tee Pieces
- Reducing Tee Pieces

For fittings from DN 320 ISO-K to DN 630 ISO-K please call Sales Office.



#### General Specification

Vacuum	to 10 <sup>-9</sup> mbar
Material	Stainless Steel
Wall Thickness	3 mm (typical up to DN320)

#### ISO-K Straight Connector STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER	EURO
63 ISO-K	100 mm	443-ISO63-X2	110,00
100 ISO-K	100 mm	443-ISO100-X2	160,00
160 ISO-K	100 mm	443-ISO160-X2	235,00
200 ISO-K	100 mm	443-ISO200-X2	345,00
250 ISO-K	100 mm	443-ISO250-X2	POR

Note: Larger sizes available to order

#### ISO-K Elbow STAINLESS STEEL

FLANGE	LENGTH A	PART NUMBER	EURO
63 ISO-K	88 mm	443-ISO63-L	128,00
100 ISO-K	108 mm	443-ISO100-L	198,00
160 ISO-K	138 mm	443-ISO160-L	415,00
200 ISO-K	178 mm	443-ISO200-L	560,00
250 ISO-K	208 mm	443-ISO250-L	770,00

Note: Larger sizes available to order

#### ISO-K Tee Piece STAINLESS STEEL

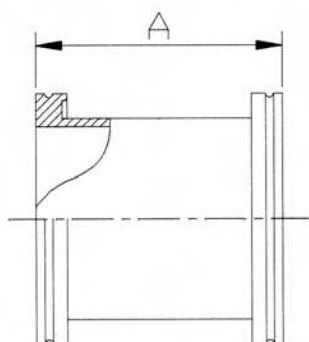
FLANGE	LENGTH A	PART NUMBER	EURO
63 ISO-K	88 mm	443-ISO63-X3	245,00
100 ISO-K	108 mm	443-ISO100-X3	300,00
160 ISO-K	138 mm	443-ISO160-X3	610,00
200 ISO-K	178 mm	443-ISO200-X3	900,00
250 ISO-K	208 mm	443-ISO250-X3	POR

Note: Larger sizes available to order

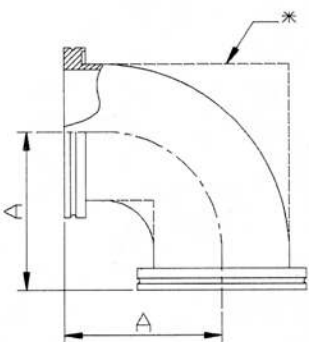
#### ISO-K Reducing Tee Piece STAINLESS STEEL

FLANGE	LENGTH A/B	PART NUMBER	EURO
100-63 ISO-K	216 / 100	443-ISO100-63-X3	330,00
160-100 ISO-K	276 / 130	443-ISO160-100-X3	600,00
200-160 ISO-K	356 / 160	443-ISO200-160-X3	900,00
250-200 ISO-K	416 / 190	443-ISO250-200-X3	POR

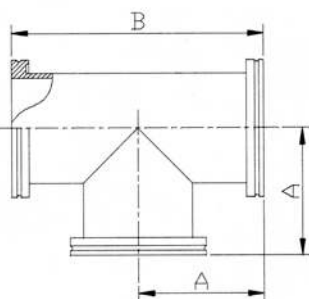
Note: Other sizes on request



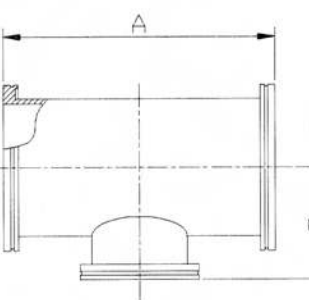
443-ISO063-X2 Straight Connector  
For full dimensions, please ask for ISO Fittings data sheet



443-ISO063-L Elbow



ISO-K 063 Tee Piece  
For full dimensions, please ask for ISO Fittings data sheet



ISO-K100 to ISO-K63 reducing Tee Piece

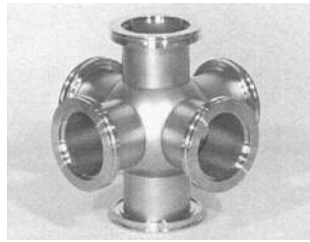
- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
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## ISO-K 4 and 6 Way Crosses

- 4 Way Crosses
- Spherical 4 Way Crosses
- 6 Way Crosses
- Spherical 6-Way Crosses

The Spherical Crosses have greatly increased work space in the centre.

Special fittings including Reducing Crosses - Please call Sales Office



### Specification Crosses

Vacuum	to 10 <sup>-9</sup> mbar
Material	Stainless Steel
Wall Thickness	3 mm (typical up to DN320)

### ISO-K 4 Way Cross

#### Standard Stainless Steel Tube Construction

FLANGE	LENGTH A	PART NUMBER	EURO
63 ISO-K	88 mm	443-ISO63-X4	345,00
100 ISO-K	108 mm	443-ISO100-X4	480,00
160 ISO-K	138 mm	443-ISO160-X4	870,00
200 ISO-K	178 mm	443-ISO200-X4	POR
250 ISO-K	208 mm	443-ISO250-X4	POR

Note: Larger sizes available to order

### ISO-K 4 Way Cross

#### Stainless Steel SPHERE Construction

FLANGE	LENGTH A	PART NUMBER	EURO
63 ISO-K	88 mm	443-ISO63-X4S	420,00
100 ISO-K	108 mm	443-ISO100-X4S	570,00
160 ISO-K	138 mm	443-ISO160-X4S	960,00
200 ISO-K	178 mm	443-ISO200-X4S	POR
250 ISO-K	208 mm	443-ISO250-X4S	POR

Note: Larger sizes available to order

### ISO-K 6 Way Cross

#### Standard Stainless Steel Tube Construction

FLANGE	LENGTH A	PART NUMBER	EURO
63 ISO-K	88 mm	443-ISO63-X6	550,00
100 ISO-K	108 mm	443-ISO100-X6	720,00
160 ISO-K	138 mm	443-ISO160-X6	1500,00
200 ISO-K	178 mm	443-ISO200-X6	POR
250 ISO-K	208 mm	443-ISO250-X6	POR

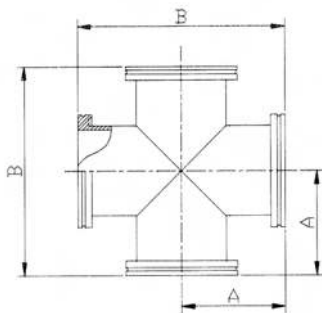
Note: Larger sizes available to order

### ISO-K 6 Way Cross

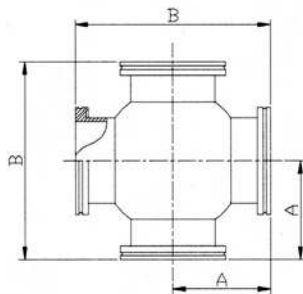
#### Stainless Steel SPHERE Construction

FLANGE	LENGTH A	PART NUMBER	EURO
63 ISO-K	88 mm	443-ISO63-X6S	600,00
100 ISO-K	108 mm	443-ISO100-X6S	820,00
160 ISO-K	138 mm	443-ISO160-X6S	1350,00
200 ISO-K	178 mm	443-ISO200-X6S	POR
250 ISO-K	208 mm	443-ISO250-X6S	POR

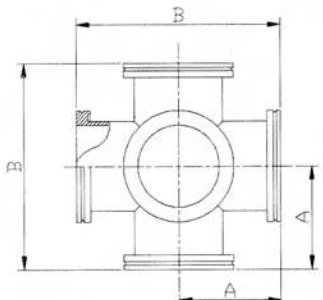
Note: Larger sizes available to order



443-ISO063-X4  
Length B = 2x A

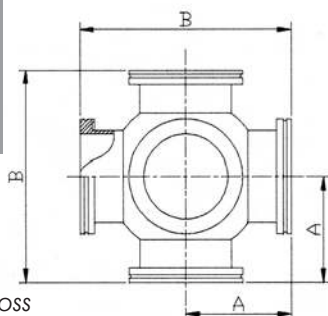


Spherical type 6-Way Cross with ISO-K Flanges.  
For full dimensions, please ask for data sheet



443-ISO063-X6

Sphere ID:	
63 ISO-K	114mm
100 ISO-K	169mm
160 ISO-K	244mm
200 ISO-K	344mm



Spherical type 6-Way Cross

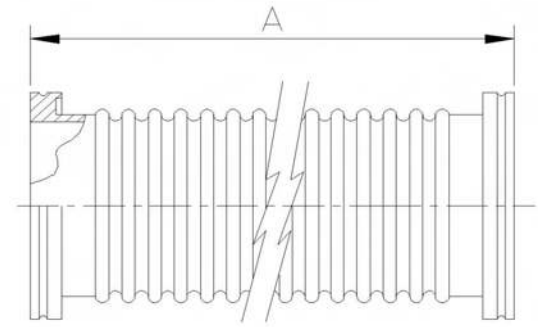
- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
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- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## ISO Flexible Couplings

## ISO Spare Viton O-Rings

Allectra Flexible Connectors are made from Hydraulically Formed Bellows with ISO-K Flanges at each end. Custom arrangements with different size or type of Flanges are available to order.



### Specification ISO Flexible Connectors

Vacuum	to 10 <sup>-9</sup> mbar
Material	Stainless Steel
Min. Bending Radius	63 ISO-K : 90mm (single bend) 100 ISO-K: 135mm (single bend)

### ISO Flexible Bellows Connector STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER	EURO
63 ISO-K	500 mm	452-HOSE-ISO63-0500	POR
63 ISO-K	1000 mm	452-HOSE-ISO63-1000	POR
100 ISO-K	500 mm	452-HOSE-ISO100-0500	POR
100 ISO-K	1000 mm	452-HOSE-ISO100-1000	POR

Note: Other sizes and lengths on request



*Replacement O-Ring  
 Diameter B is 5.7mm for sizes up to 250 ISO-K,  
 Diameter B is 7mm for all larger ones.  
 For full dimensions, please ask for data sheet.*

### ISO Spare O-Ring Viton

FLANGE	No PER PACK	PART NUMBER	EURO
63 ISO	5	441-ISO63-O	17,00
100 ISO	5	441-ISO100-O	17,00
160 ISO	5	441-ISO160-O	34,00
200 ISO	5	441-ISO200-O	50,00
250 ISO	5	441-ISO250-O	68,00
320 ISO	5	441-ISO320-O	90,00
400 ISO	5	441-ISO400-O	140,00
500 ISO	5	441-ISO500-O	165,00
630 ISO	5	441-ISO630-O	230,00

**ADAPTORS AND SPECIAL HARDWARE**



**14.1: ADAPTORS CF TO OTHER TYPES**

-> Page 14.2

Adaptors from CF to KF  
 Adaptors from CF to ISO-K  
 Adaptors from CF to female VCR



**14.2 ADAPTORS KF TO OTHER TYPES**

-> Page 14.3

Adaptors from KF to ISO-K  
 Adaptors KF to Swagelock



**14.3 PRESSURE BURST DISCS**

-> Page 14.4

Pressure Burst Discs- Stainless Steel  
 Standard and Low Pressure versions



- 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

# 14.2 ADAPTORS CF TO OTHER TYPES

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## Adaptors from CF to KF, ISO-K and VCR

Between Series Adaptors are a useful and simple way of connecting components from different flange systems. Allectra offers Adaptors between all the combinations of the most common systems.

Custom adaptors for any flange type to any other are available to order.

Various Glass to Metal Adaptors are offered on request. Please ask for details.



### General Specification Adaptors

Vacuum	UHV
Material	Stainless Steel
Overall length	A
16CF to 16/25KF	36mm
40CF to 25KF	36mm
40CF to other sizes	50mm
63CF and larger	50mm
CF to ISO-K	90mm

### Adaptors from CF to KF Stainless Steel

FLANGE 1	FLANGE 2	PART NUMBER	EURO
16CF	16KF	460-C16-K16	32,00
16CF	25KF	460-C16-K25	34,00
40CF	25KF	460-C40-K25	50,00
40CF	40KF	460-C40-K40	58,00
63CF	40KF	460-C63-K40	108,00
100CF	40KF	460-C100-K40	135,00

Note: Other flange combinations available on request

### Adaptors from CF to ISO-K Stainless Steel A = 90mm

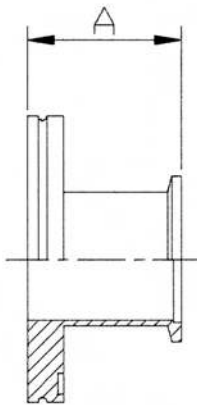
FLANGE 1	FLANGE 2	PART NUMBER	EURO
63CF	63 ISO-K	460-C63-ISO63	185,00
100CF	100 ISO-K	460-C100-ISO100	260,00
160CF	160 ISO-K	460-C160-ISO160	370,00
200CF	200 ISO-K	460-C200-ISO200	530,00

Note: Other flange combinations available on request

### Adaptors from CF to female VCR Stainless Steel

FLANGE 1	VCR	PART NUMBER	EURO
16CF	1/8" (3.17mm)	460-C16-VCRF317	65,00
16CF	1/4" (6.35mm)	460-C16-VCRF635	65,00

Note: Other flange combinations available on request



Glass to Metal adaptors are available in a large variety, for example Pyrex or Quartz - open or doomed, with bellow... Please call Sales Office



- 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
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- 14 Adaptors Specials
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## Adaptors KF to ISO(K)

## Adaptors KF to Swagelock

## KF Hose Adaptor

Adaptors can be made to order from any flange combinations in lengths as required.



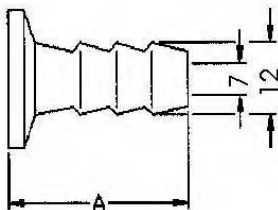
### Specification KF-Adaptor

Vacuum Materials	High Vacuum Stainless Steel
------------------	-----------------------------

Conical adapters ISO-K 63 to KF are available on request

New in our product range:

Feedthroughs for liquids and LN, with tube endings, Swagelock connectors or VCR couplers.  
 Please ask for more information.



Rubber Hose adapter in Stainless Steel -KF16 (left) and Aluminium-KF40

### Adaptors from KF to ISO-K Stainless Steel A = 40mm

FLANGE 1	FLANGE 2	PART NUMBER	EURO
25KF	63 ISO-K	460-ISO63-K25	55,00
40KF	63 ISO-K	460-ISO63-K40	70,00
50KF	63 ISO-K	460-ISO63-K50	102,00
40KF	100 ISO-K	460-ISO100-K40	115,00
50KF	100 ISO-K	460-ISO100-K50	165,00

Note: Other flange combinations available on request

### KF to Swagelock Adaptors STAINLESS STEEL

FLANGE	SWG SIZE	PART NUMBER	EURO
16KF	1/8" (3.17mm)	461-K16-SWG3.2	66,00
16KF	1/4" (6.35mm)	461-K16-SWG6.4	66,00
16KF	3/8" (9.52mm)	461-K16-SWG9.5	66,00

Note: Other KF Flanges and Swagelock sizes on request

Also available with CF flanges

### Adaptors from KF to 12mm ID PVC Hose Stainless Steel A = 40mm

FLANGE	A	PART NUMBER	EURO
16KF	40mm	461-HN12-K16-SS	25,00
25KF	40mm	461-HN12-K25-SS	25,00
40KF	40mm	461-HN12-K40-SS	28,00
50KF	40mm	461-HN12-K50-SS	38,00

### Adaptors from KF to 12mm ID PVC Hose Aluminium A = 40mm

FLANGE	A	PART NUMBER	EURO
16KF	40mm	461-HN12-K16-AL	15,00
25KF	40mm	461-HN12-K25-AL	17,00
40KF	40mm	461-HN12-K40-AL	19,00

# 14.4 PRESSURE BURST DISCS

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 F: fr@allectra.com



## Pressure Burst Discs

Pressure Burst Discs are Flange mounted Membranes which are designed to rupture and release gas in the event of potentially hazardous pressures greater than atmospheric pressure.

Two versions are offered:

- Standard type with a max. overpressure of 1.7 bar
- Low Pressure type with max. 0.8 bar overpressure (0.8 bar gauge)

They are available on 16CF / 40CF / 16KF / 25KF / 40KF



Standard Version  
461-PBD-C40

### Specification Burst Discs Standard and Low Pressure

	Standard	Low Pressure
Vacuum		UHV
Construction	All Metal SS	
Temperature	-200 ... +350°V	
Bursting pressure		
typ. (differential)	1.2 ... 1.4 bar	0.6 ... 0.8 bar
max. (@22°C)	1.7 bar	0.8 bar
Mounting flanges	16CF / 40CF / 16KF / 25KF / 40KF	
Flow rates	150l/s (40CF/40KF), 35l/s (16CF/16KF)	
Opt. outlet flange for gas recovery	DN50KF	

### Pressure Burst Disc CF Flange All Metal

FLANGE	HIGHT	PART NUMBER	EURO
16CF	48	461-PBD-C16	225,00
40CF	24	461-PBD-C40	225,00

### Pressure Burst Disc KF Flanges All Metal

FLANGE	HIGHT	PART NUMBER	EURO
16KF	48	461-PBD-K16	220,00
25KF	48	461-PBD-K25	220,00
40KF	23	461-PBD-K40	220,00



Standard Version  
461-PBD-C16  
Body diameter 45mm

### Low Pressure Burst Disc CF Flange All Metal



FLANGE	HIGHT	PART NUMBER	EURO
16CF	72	461-PBD-C16-LP	447,00
40CF	72	461-PBD-C40-LP	452,00

### Low Pressure Burst Disc KF Flanges All Metal



FLANGE	HIGHT	PART NUMBER	EURO
16KF	71	461-PBD-K16-LP	445,00
25KF	71	461-PBD-K25-LP	445,00
40KF	71	461-PBD-K40-LP	445,00

A leaking LN2 cooling system can cause a very rapid pressure rise, for health and safety reasons all vacuum vessels with such a risk require a pressure burst disk.

For a full data sheet please ask the sales office or download at [www.allectra.com](http://www.allectra.com)



Low Pressure Version  
461-PBD-C40-LP  
Body diameter 59mm

Pressure Burst Discs with gas recovery can be built to order. Please ask Sales Office for details.

- 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



UHV AND HIGH VACUUM CHAMBERS



15.1 UHV AND HV CHAMBERS

-> Page 15.2

Stainless Steel UHV Chambers  
 Stainless Steel HV Chambers  
 Chamber Options



15.2 SPECIAL FABRICATIONS

-> Page 15.3

Special vacuum Fabrications  
 Vacuum Equipment Assembly  
 Non-magnetic Chamber  
 Mu-metal Shields  
 Mu-metal Chambers



15.3 STANDARD CHAMBERS

-> Page 15.4

Fast Entry Lock (FEL) Chambers  
 Complete Load Locks  
 Variation of Standard Fittings



Chamber Types

Geometry	Material	Application
Cylinder	Stainless Steel, Aluminium, Mu-Metal	General Purpose UH and UHV
Sphere	Stainless Steel, Aluminium, Mu-Metal	Surface Science AFM/ STM
Cube with door	Stainless Steel, Aluminium	HV, Box coating, deposition

- 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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- 11 CF Hardware
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- 1 Sub-D
- 2 CM + DIL F/T
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- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
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## UHV and High Vacuum Chambers

Alllectra offers custom built chambers for UHV and HV systems

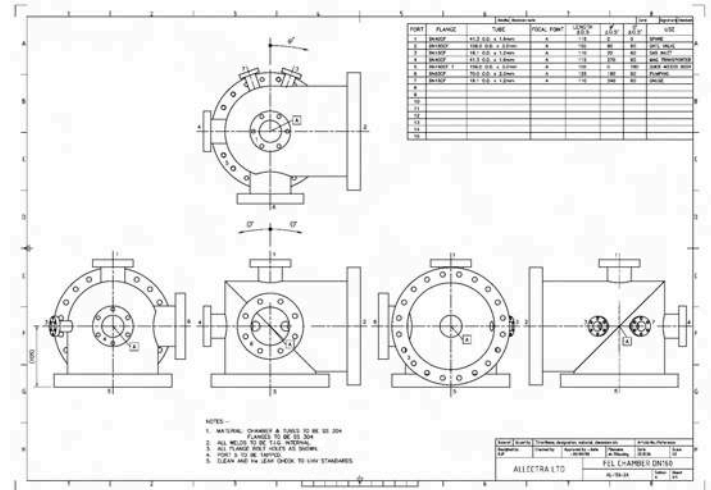
- Stainless Steel 316L or 304
- Standard design available
- Engineering drawings produced from customer's sketches or plans
- Chambers are cleaned to UHV standards using modern environmentally friendly processes



*Spherical Chamber made from Stainless Steel Spinings - typical application Surface Science*

### General Specification for SS Chamber

Vacuum	UHV $5 \times 10^{-12}$ mbar HV $5 \times 10^{-9}$ mbar
Material Body	SS304 (1.4301) or 316L (1.4404)
Material CF Flanges	SS 316L option 316LN (1.4429)
CF Flange orientation	Fixed Flange bolt holes straddle the vertical axis
Wall Thickness	diameters up to 160 2 mm diameters over 160 3.2 mm Large vessels 5.0 mm
Standard Tolerances	+/- 0.5mm linear +/-0.5° angular (Finer tolerances on request)
Welding	TIG internal welds or full penetration if internal welding is not possible
Finish	UHV clean and hand polish – Electro-polish option



*Alllectra will produce detailed engineering drawings based on customer's sketches. 3D compatibility check is included.*

### Chamber Options

- Vacuum - HV or UHV
- Electropolish
- Spherical Chambers for Surface Science or UHV STM/AFM
- Box or Cube shape chambers with a full width O-Ring sealed door
- Mu-metal construction or Stainless Steel with Mu-metal shields
- Flanges CF, KF, ISO(K) or custom
- Ports focussed on chamber centre or another defined point, straight or angled
- Water cooling - either double wall vessel or brazed-on cooling channels
- Mounting bench
- Blanking flanges, pump down and seal off with dry N<sub>2</sub> at atmospheric pressure
- Vacuum annealing



*A Special Purpose high dimensional accuracy chamber with Custom flanges*



Send us your sketch for an initial 3D check and a quote.

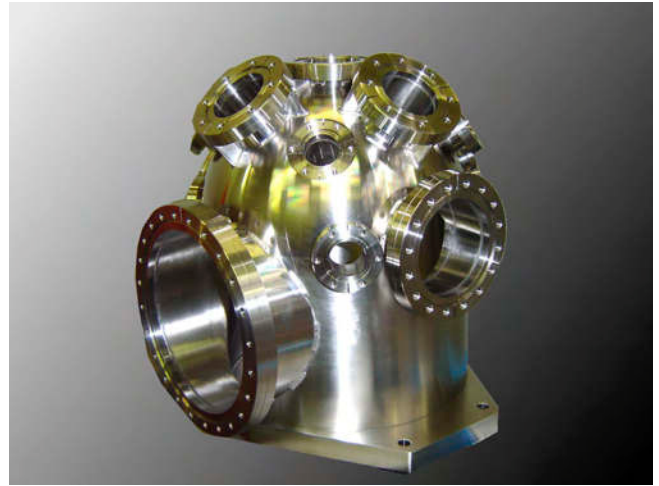
**Special Vacuum Fabrications/ Vacuum Instrument Assembly/ Non-magnetic Chambers**

**Special Vacuum Fabrications**

Allectra can design and build special purpose equipment or alternatively build HV or UHV items to customers drawings. If required, fully detailed manufacturing drawings can be prepared from sketches.

Some examples of special equipment built by Allectra:

- Differentially pumped beamline element for SOLEIL synchrotron
- Miniature rectangular UHV chamber for an Industrial application
- Stepper Motor controlled shutter mechanism for a Synchrotron application
- Chamber including pumping system



**Non-magnetic Chambers**

Allectra offers a number of solutions for creating a very low magnetic field environment.

- SS chambers 316L with 316LN flanges
- Aluminium-chambers with Bi-Metal flanges (see p. 156)
- SS chambers with Mu-metal shields
- Mu-metal chambers

*Small industrial chamber with integrated Sub-D feedthrough*



**Mu-metal Shields**

Allectra Stainless Steel Cylindrical Chambers can be supplied with internal mu-metal shielding which with proper design will reduce the residual magnetic field at the centre to less than 5 milli-Gauss

In order to achieve this care must be taken with the port sizes and position to minimise field ingress. Allectra can advise on design suitability if required.

For minimum magnetic field, the very low magnetic permeability stainless steel grade 316LN is recommended for the Flanges.

**Mu-metal Chambers**

UHV chambers can be constructed entirely from Mu-metal except for the Flanges. This method yields a very low residual magnetic field at the centre. However, the manufacturing technique is more involved and Mu-metal chambers are generally more expensive than SS chambers with shields

Mu-metal chambers are used typically for Surface Science Analysis Chambers where techniques like EELS are used. They are constructed from 5mm Mu-metal to obtain sufficient strength. Careful design is essential because Mu-metal is a soft alloy and not as strong as Stainless Steel.



*Large Mu-Metal Chamber*

See Section 16 for examples of Al chambers.

- 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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- 9 Motion Manipulation
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### Fast Entry Lock (FEL) Chamber

#### Modified Fittings

Allectra offers a standard design of Fast Entry Lock chamber which is very versatile and which provides the maximum access and viewing diameters to the sample carrier position.

Also available are a range of modified standard fittings like 4 way crosses which can be easily and cheaply fitted with extra ports or simple modifications.

#### Specification FEL Chamber

Vacuum	UHV 5 x 10 <sup>-12</sup> mbar	
Material	Stainless Steel	
Door Seal	Viton	
Hinge	Aluminium	
Viewport	7056 glass	
Viewport Seals	Kovar - welded seal	
Temp.	200°C max.	
FEL Chamber includes the Quick Access Door.		

#### Quick Access Door

Flanges	Access Ø	View Ø
CF63	60 mm	63 mm
CF100	95 mm	90 mm
CF160	150 mm	135 mm

(For specification of QADs see Sec. 9)



Fast Entry Lock Chamber with Quick Access Door including Viewport

#### FEL Chambers Stainless Steel with Viton sealed DOOR & Viewport

DOOR (2)*	GV (4)*	PART NUMBER	EURO
63CF	63CF	640-LLC-63-63-VP	2.200,00
100CF	63CF	640-LLC-100-63-VP	2.300,00
100CF	100CF	640-LLC-100-100-VP	2.550,00
100CF	160CF	640-LLC-100-160-VP	2.850,00
160CF	160CF	640-LLC-160-160-VP	2.950,00

\* Port numbers - see Table on left

#### FEL Chamber Construction

FEL Chambers are designed to give the maximum opening diameter for easy access and the maximum view diameter if a viewport door is fitted.

They are based on a 316L Stainless steel Sphere with ports for;

- Port 1 Pump
- Port 2 Tapped for Door
- Port 3 Magnetic transporter
- Port 4 Gate valve
- Port 5 40CF for Gauge or viewport
- Port 6 16CF for gas inlet
- Port 7 16CF for Gauge or spare

#### Complete Load Locks

include Fast Entry Lock Chamber and Door with viewport UHV Gate Valve with Viton seal.

Standard Magnetic transporter with 800mm travel

Blanking flanges for unused ports.

#### Modified Standard Fittings

Allectra offers a cost effective way of building a custom vacuum chamber. Starting with a Standard CF or ISO fitting (Sec. 13), ports can be added, taken away or port sizes changed as required. In this case the price is the cost of the standard fitting plus the cost of the changes. If these are quite simple, usually no drawing is required.

Please ask Sales Office for details.



#### Complete Load Lock Systems including Gate Valve (GV) with Viton sealed DOOR, Viewport & 600mm travel

DOOR (2)*	GV (4)*	PART NUMBER	EURO
63CF	63CF	640-LLS-63-63-VP-600	POR
100CF	63CF	640-LLS-100-63-VP-600	POR
100CF	100CF	640-LLS-100-100-VP-600	POR
160CF	100CF	640-LLS-160-100-VP-600	POR
160CF	160CF	640-LLS-160-160-VP-600	POR

\* Port numbers - see Table on left

*Load Lock Systems can be supplied without Viewport or Gate Valve. If required, Customer's own fittings can be re-used to save cost. Please ask Sales Office for details.*

## Part Number Index

On the following pages all part codes used in the catalogue are listed with the page number they appear.

Allectra Part Codes start with a 3 digit number. This number helps, to find the section, where the item is listed. Here a short summary of this system:

Part code starts with	Main Item	Section
1..	Viewports, Optics	7
11.	Quartz / Fused silica Viewports	7.5 / ... / 7.9
12.	Kodial Viewports	7.3
13.	Special materials Viewports	7.4 / 7.10 / 7.11
15.	Fibre optics	7.13 / ... / 7.17
2..	Electrical f/t	1 / 2 / 3 / 4 / 5
21.	Sub-D Feedthroughs, connectors	1
22.	Circular Miniature Feedthroughs	2
241	Coaxial	3
242	Coaxial 50 Ohm	3.3 / ... / 3.7 / 3.9 / 3.11 / 3.12
25.	High voltage Coaxial	3.10
26.	"Classic" electrical Feedthroughs	4
262	Thermocouple Feedthroughs	5
27.	Ceramic Breaks	4.12
3..	Cables and wires	6
311	Kapton insulated cables	6.2 / 6.3 / 6.4
33.	Glue and Grease	6.11
36.	Connectors and crimp pins	4.14 / 6.8 / 6.9
38.	Ready made cables	6.6 / 6.7 / 6.8
4..	Hardware	11 / 12 / 13 / 14 / 16
41.	Flanges and Hardware CF	11
43.	Flanges and Hardware KF	12
44.	ISO-K Components	13
45.	Hoses	14
5..	Valves	8
511	Gate Valves and Right Angle Valves	8.2 / 8.3
512	All Metal Valves	8.5
514	Leak Valves	8.6
6..	Motion and Manipulation	9 / 15
61.	Linear and Rotary drives	9.2 / 9.3 / 9.4
62.	Manipulators (Z / XY / XYZ)	9.5 / 9.6
64.	Load-Lock Components	15.4
67.	In-Vacuum Motors and Slides	9.11
7..	Thin Film and Pressure Measurement	10
71.	Thin Film components	10.2 / 10.3
72.	Pressure measurement	10.4
8..	Chamber and custom fabrication	15 / 16
E	EVAC Components	12.8 / see separate catalogue

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SAFE HIGH VOLTAGE (SHV) TYPE N MICRODOT AND TRI-AXIAL FEEDTHROUGHS

ZWISCHENSTÜCKE

L IN-VADE UUM