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allectra

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

Allectra – How to contact us



Together with strategic partners, Allectra offers world-wide service.

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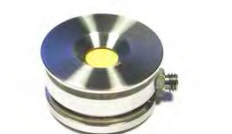
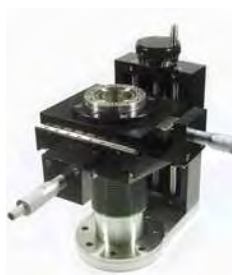
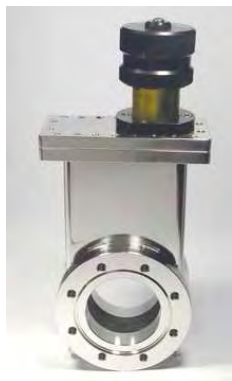
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Allectra Vacuum Components Catalogue - Terms and Conditions (Summary)

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

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

The prices do not include VAT.

Prices can be quoted in Pounds Sterling, Euro, 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

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"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 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 DN80 (4 5/8"), DN125 (6 3/4") and O.D.s 13 1/4", 14" (300CF) and 16 1/2" (350CF). 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 TM 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 1×10^{-10} mbar. UHV Components are leak tested for a leak rate less than 5×10^{-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.

Conformance of Allectra Components

Allectra CF UHV Components use the internationally accepted copper gasket flange system. They are compatible with the Varian Conflat® and CF or FC types from Vacuum Generators and other manufacturers for sizes up to and including DN200CF. They conform to the Alternate Series of Flanges described in ISO 3669. For sizes over DN200CF, no international standard exists. Please ask Sales Office for advice in this case.

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.

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 299,00 339,00
304L	1.4306	0,03%	18%	9%	-	-	Extra low carbon prevents carbide precipitation - general UHV use	Good 309,00 369,00
304LN	1.4311	0,03%	18%	9%	-	0,18%	Improved mech. properties compared to 304L	Good 369,00 695,00
316	1.4401	0,08%	16,6%	12%	2,5%	-	General purpose but higher corrosion resistance than 304	Very good 495,00
316L	1.4404	0,03%	16,6%	12%	2,5%	0,1% max	Extra low carbon, good for TIG welding, highest corrosion resistance	Excellent 498,00 519,00
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 519,00
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

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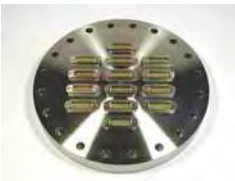
Sub-miniature D Type Feedthroughs on CF Flanges
9 to 300 pins, 40CF to 160CF



1.2 SUB-D: KF & ISO FLANGES

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



1.3 SUB-D: SPECIAL ASSEMBLIES

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Multiple Feedthrough Flanges
CF, ISO-K and custom



1.4 SUB-D: HIGH DENSITY

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



1.5 SUB-D: COMBINATION TYPES

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Combination Sub-D Feedthroughs
Power and Co-axial types



1.6 SUB-D: UHV SOCKETS

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UHV PEEK and Ceramic Plugs and Sockets



1.7 SUB-D: HV & AIR SOCKETS

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High Vacuum Plugs and Sockets
Air Side Sockets



1.8 SUB-D: CRIMP PINS

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Crimp Pins for Sub-miniature D plugs and sockets



1.9 SUB-D: SPECIAL SOCKETS

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



1.10 SUB-D: THERMOCOUPLE

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Sub-miniature D Feedthroughs for use with K type thermocouples



1.11 SUB-D: READY MADE CABLES

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Sub-D compatible ready made In-vacuum cables

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



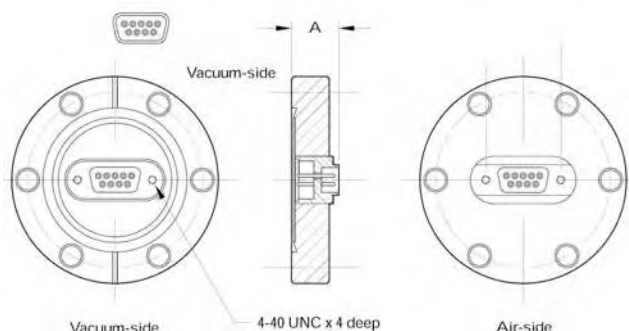
General Specifications Sub-Miniature D

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 ⁻¹⁰ mar-l/s He

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

SIZE	NO. OF PINS	PART NUMBER	£
40CF	9	210-D09-C40	225.00
40CF	15	210-D15-C40	275.00
40CF	25*	210-D25-C40	325.00
63CF	15	210-D15-C63	295.00
63CF	25	210-D25-C63	325.00
63CF	50	210-D50-C63	451.00
100CF	37	210-D37-C100	433.00
100CF	50	210-D50-C100	477.00

* uses special socket connector on vacuum side - page 13

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

SIZE	NO. OF PINS	PART NUMBER	£
63CF	2x D15	210-D15-C63-2	585.00
63CF	2x D25	210-D25-C63-2	620.00
63CF	3x D15	210-D15-C63-3	822.00
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 10

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



210-D50-CF100-2



210-D15-CF63-2



210-D15-CF100-6

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 page14), 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 ⁻⁹ 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 ⁻⁹ 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

SIZE	NO. OF PINS	PART NUMBER	£
25KF	9*	210-D09-K25	248.00
40KF	9	210-D09-K40	260.00
40KF	15**	210-D15-K40	281.00
50KF	15	210-D15-K50	295.00
50KF	25**	210-D25-K50	344.00
63ISO-K	25*	210-D25-ISO63	256.00
63ISO-K	50*	210-D50-ISO63	432.00
100ISO-K	37	210-D37-ISO100	422.00
100ISO-K	50	210-D50-ISO100	442.00

* uses small "SX"-type socket connector - page 14

** uses small "S"-type socket connector - page 14

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

SIZE	NO. OF PINS	PART NUMBER	£
63ISO-K	2x15	210-D15-ISO63-2	565.00
63ISO-K	2x25	210-D25-ISO63-2	600.00
63ISO-K	3x15	210-D15-ISO63-3	800.00
100ISO-K	4x25	210-D25-ISO100-4	POR
100ISO-K	6x50	210-D50-ISO100-6	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	£
9	14.5x33	218-D09-SS	244.00
15	16.5x38	218-D15-SS	276.00
25	19x55	218-D25-SS	294.00
37	19x70	218-D37-SS	365.00
50	19x68	218-D50-SS	382.00

non-magnetic versions on request

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 to special order



Specifications for Specials

Possible Feedthroughs	Sub-D, Coaxial and all other Feedthroughs
Possible Flanges	Combinations with Fibreoptic or viewports 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 5×10^{-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	£
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	£
40CF	9 + BNC	219-D09-BNC-C40	POR
40CF	15 + 2xBNC	219-D15-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 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)

Titanium Feedthroughs are very special and only custom made. If zero magnetism is an issue, they might be the solution. Please enquire.

Sub-D Feedthrough on CF40 flange Titanium Flange

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

High Density Sub-D

26 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. A 3-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	<5x10 ⁻¹⁰ 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.

Sub-D Feedthroughs on CF Flanges, HIGH DENSITY

SIZE	NO. OF PINS	PART NUMBER	£
WELD	26	218-HD26-SS	379.00
40CF	26	210-HD25-C40	391.00
40KF	26	210-HD26-K40	385.00
63CF	2x26 (52)	210-HD26-C63-2	822.00
63CF	3x26 (78)	210-HD26-C63-3	1,208.00

Sub-D High Density CONNECTORS AIR/ VACUUM

TYPE	NO. OF PINS	PART NUMBER	£
AIR	26	211-FS26-AIR	10.50
HV/ UHV	26	211-FS26-PK	155.00

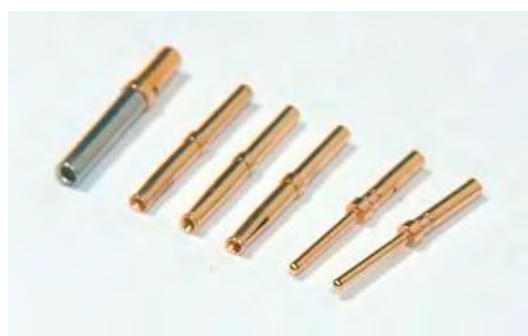
26 off Crimp pins are included!

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

Sub-D High Density CRIMP PINS

TYPE	NO. OF PINS	PART NUMBER	£
HV/ UHV	26	212-PINFHD-26	28.00



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



Air Side Connector. The connector is solder type

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.

**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 ⁻¹⁰ mbar-l/s He

Sub-D Feedthroughs on CF Flanges, POWER (P) + Standard (S) 1.0 mm Pin Combinations

SIZE	NO. OF PINS	PART NUMBER	£
WELD	2P+5S	218-X15-2P5	330.00
40CF	2P+5S	210-X15-2P5-C40	372.00
63CF	2P+5S	210-X15-2P5-C63	410.00
63CF	4P+10S	210-X15-2P5-C63-2	766.00
40KF	2P+5S	210-X15-2P5-K40	367.00
63ISO-K	2P+5S	210-X15-2P5-ISO63	400.00
63ISO-K	4P+10S	210-X15-2P5-ISO63-2	750.00

HIGH POWER Connectors and Pins

TYPE	NO. OF PINS	PART NUMBER	£
AIR	2P +5	211-FX15-2x5-AIR	8.00
AIR Male	2P +5	211-MX15-2x5-AIR	8.00
HV*	2P +5	211-FX15-2x5-HV	54.00
HV Male*	2P +5	211-MX15-2x5-HV	54.00
UHV *	2P +5	211-FX15-2x5-PK	141.00
Power Female	1 off	212-POWER-F	3.00
Power Male	1 off	212-POWER-M	2.60
Coax Female	1 off	212-COAX-F	POR
Coax Male	1 off	212-COAX-M	POR

*) Vacuum connectors include 5 off crimp pins

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.

Sub-D Feedthroughs on CF/ KF Flanges, COAXIAL (CX) + Standard (S) 1.0 mm pins

SIZE	NO. OF PINS	PART NUMBER	£
WELD	2CX+3S	218-X15-2C3	POR
40CF	2CX+3S	210-X15-2C3-C40	POR
40KF	2CX+3S	210-X15-2C3-K40	POR
63CF	4CX+6S	210-X15-2C3-C63-2	POR
63CF	6CX+9S	210-X15-2C3-C63-3	POR

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
Impedence Coax	not constant
Temp.	-200°C to 230°C
Leak rate	<5x10 ⁻¹⁰ mbar-l/s He



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.

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 15 for range.
HV versions and air side connectors are listed on page 14.

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)
(S 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)
(S 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 page 67). They fit to Male and Female Connectors.



UHV PEEK Sockets Female PEEK Sockets to fit Feedthroughs

VACUUM	No. OF POLES	PART NUMBER	£
HV/UHV	9	211-FS09-PK	105.00
HV/UHV	15	211-FS15-PK	122.00
HV/UHV	25	211-FS25-PK	129.00
HV/UHV	25	211-FS25-PK-S*	135.00
HV/UHV	37	211-FS37-PK	146.00
HV/UHV	50	211-FS50-PK	155.00

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

UHV PEEK Plugs Male PEEK Plugs to fit Female Sockets

VACUUM	No. OF POLES	PART NUMBER	£
HV/UHV	9	211-MS09-PK	105.00
HV/UHV	15	211-MS15-PK	122.00
HV/UHV	25	211-MS25-PK	129.00
HV/UHV	37	211-MS37-PK	146.00
HV/UHV	50	211-MS50-PK	155.00

UHV Ceramic Sockets Female Ceramic Sockets to fit Feedthroughs

VACUUM	No. OF POLES	PART NUMBER	£
UHV	9	211-FS09-UHV	148.00
UHV	15	211-FS15-UHV	173.00
UHV	25	211-FS25-UHV	188.00
UHV	25	211-FS25-UHV-S*	217.00
UHV	37	211-FS37-UHV	210.00
UHV	50	211-FS50-UHV	218.00

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

UHV Ceramic Plugs Male Ceramic Plugs to fit Sockets

VACUUM	No. OF POLES	PART NUMBER	£
UHV	9	211-MS09-UHV	148.00
UHV	15	211-MS15-UHV	173.00
UHV	25	211-MS25-UHV	182.00
UHV	37	211-MS37-UHV	POR
UHV	50	211-MS50-UHV	237.00

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

VACUUM	No. OF POLES	PART NUMBER	£
HV/UHV	9	211-HSG-D09-UHV	49.00
HV/UHV	15	211-HSG-D15-UHV	55.00
HV/UHV	25	211-HSG-D25-UHV	62.00
HV/UHV	50	211-HSG-D50-UHV	POR

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 16.



General Specification HV Sub-D Connectors

Vacuum	High Vacuum
Socket type	Female- fits Feedthroughs & Male Plugs (for internal connections)
Body material	DEP
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



211-FS15-HV-S



211-FS09-HV-SX

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.



211-HSG-D50-SR



211-HSG-D15-SR



211-FS09-AIR with Solder pins

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

VACUUM	NO. OF POLES	PART NUMBER	£
HV	9	211-FS09-HV	42.00
HV	9	211-FS09-HV-SX	42.00
HV	15	211-FS15-HV	45.00
HV	15	211-FS15-HV-S	50.00
HV	25	211-FS25-HV	52.00
HV	25	211-FS25-HV-SX	54.00
HV	37	211-FS37-HV	65.00
HV	37	211-FS37-HV-SX	67.00
HV	50	211-FS50-HV	76.00
HV	50	211-FS50-HV-S	80.00

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

VACUUM	NO. OF POLES	PART NUMBER	£
HV	9	211-MS09-HV	36.50
HV	15	211-MS15-HV	40.00
HV	25	211-MS25-HV	47.00
HV	37	211-MS37-HV	59.00
HV	50	211-MS50-HV	68.00

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

VACUUM	NO. OF POLES	PART NUMBER	£
HV	9	211-HSG-D09-SR	28.00
HV	15	211-HSG-D15-SR	29.00
HV	25	211-HSG-D25-SR	32.00
HV	37	211-HSG-D37-SR	36.50
HV	50	211-HSG-D50-SR	40.00

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	£
AIR	9	211-FS09-AIR	8.00
AIR	15	211-FS15-AIR	9.00
AIR	25	211-FS25-AIR	9.50
AIR	37	211-FS37-AIR	13.00
AIR	50	211-FS50-AIR	14.50

Male versions available on request

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	£
STANDARD	10	212-PINF-10	11.50
STANDARD	15	212-PINF-15	16.50
STANDARD	25	212-PINF-25	23.50
BUDGET	10	212-PINF-10-B	9.50
BUDGET	25	212-PINF-25-B	20.00
SMALL	10	212-PINF-10-S	12.50
SMALL	25	212-PINF-25-S	25.00

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

TYPE	No. PER PKT.	PART NUMBER	£
STANDARD	10	212-PINM-10	7.00
STANDARD	25	212-PINM-25	15.00
SMALL	10	212-PINM-10-S	8.00
SMALL	25	212-PINM-25-S	17.00

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

TYPE	No. PER PKT.	PART NUMBER	£
STANDARD	10	212-PINF-10-NH	10.50
STANDARD	25	212-PINF-25-NH	24.00

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

TYPE	No. PER PKT.	PART NUMBER	£
BUDGET	1	214-CTOOL-SUB-D	85.00
HIGH QUALITY	1	214-CTOOL-HQ	422.00

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

TYPE	No. PER PKT.	PART NUMBER	£
STANDARD	1	214-CTOOL	172.00

Pin demounting Tool for Sub-D ONLY FOR HV TYPES

TYPE	No. PER PKT.	PART NUMBER	£
DEMOUNT	1	214-CRIMPINS	22.00

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 14



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	£
AIR	9	211-D09-ADR	15.50
AIR	15	211-D15-ADR	18.00
AIR	25	211-D25-ADR	24.50
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	£
Air Socket*	26	211-FS26-AIR	10.50
HV/UHV Socket*	26	211-FS26-PK	155.00
* includes Solder tags or Pins			
Pin female	10	212-PINFHD-10	13.00
Pin female	26	213-PINFHD-26	28.00
Pin male	10	213-PINMHD-10	13.00
Pin male	26	213-PINMHD-26	28.00

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

TYPE	NO. OF PINS	PART NUMBER	£
Air Socket	2P/CX +5	211-FX15-2x5-AIR	8.00
Air Plug	2P/CX +5	211-MX15-2x5-AIR	8.00
HV Socket*	2P/CX +5	211-FX15-2x5-HV	54.00
HV Plug	2P/CX +5	211-MX15-2x5-HV	54.00
UHV Socket*	2P/CX +5	211-FX15-2x5-PK	141.00
* includes 5 standard Female Pins (212-PINF type)			
Female P Pin	1 off	212-POWER-F	3.00
Male P Pin	1 off	212-POWER-M	2.60
Female CX Pin	1 off	212-COAX-F	POR
Male CX Pin	1 off	212-COAX-M	POR

Male connectors can be used for in-vacuum connections

Pin Removal Tool for Power / Coax Pins

TYPE	PART NUMBER	£
Pin Removal tool	214-EXT-POWER	118.00

Sub-miniature D Feedthroughs for use with K type Thermocouples

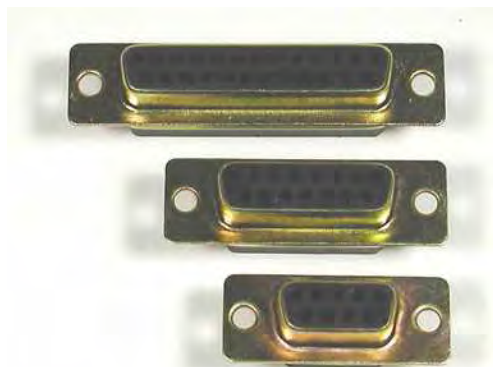
Sub-D F/Ts may be used for T/Cs. A Standard D-Type Feedthrough is used but the Air and Vacuum side Pins are changed to T/C types. Although the use of standard Pin material in contact with the T/C Pins results in the creation of two T/C junctions, the measurement error introduced is negligible provided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

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 Page 75

Other Crimp Pins - See Page 52 and Page 69



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	£
K, Female	2x5	213-PINF-K	43.00



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

TYPE	No. PER PKT.	PART NUMBER	£
K, Male	2x5	213-PINF-M	43.00



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

TYPE	No. PER PKT.	PART NUMBER	£
Standard	1	214-CTOOL-TC	26.00
High Quality	1	214-CTOOL-TC-HQ	208.00



214-CTOOL-TC-HQ



214-CTOOL-TC

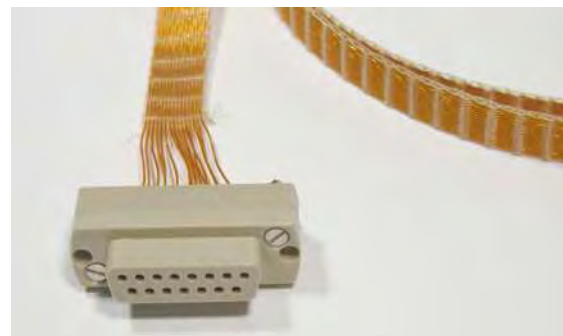
Air side Thermocouple Sockets for Sub-D Fit to K Type Thermocouple Pins

TYPE	SIZE	PART NUMBER	£
AIR	9	211-FS09-ATC	16.00
AIR	15	211-FS15-ATC	18.00
AIR	25	211-FS25-ATC	22.00
AIR	37	211-FS37-ATC	25.00
AIR	50	211-FS50-ATC	27.00

Sub-D ready made In-Vacuum Cables

Allectra 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	£
HV (PTFE)	9	380-D09FXHPT-500	85.00
HV (PTFE)	15	380-D15FXHPT-500	93.00
HV (PTFE)	25	380-D25FXHPT-500	112.00
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	£
HV	9	380-D09FXHR-500	124.00
HV	15	380-D15FXHR-500	154.00
HV	25	380-D25FXHR-500	199.00
HV	37	380-D37FXHR-500	299.00
HV	50	380-D50FXHR-500	363.00

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

VACUUM	No. OF PINS	PART NUMBER	£
HV/UHV	9	380-D09FXPR-500	195.00
HV/UHV	15	380-D15FXPR-500	245.00
HV/UHV	25	380-D25FXPR-500	291.00
HV/UHV	37	380-D37FXPR-500	410.00
HV/UHV	50	380-D50FXPR-500	477.00

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

VACUUM	No. OF PINS	PART NUMBER	£
UHV	9	380-D09FXUR-500	229.00
UHV	15	380-D15FXUR-500	285.00
UHV	25	380-D25FXUR-500	345.00
UHV	37	380-D37FXUR-500	459.00
UHV	50	380-D50FXUR-500	543.00

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

No. OF WIRES	LENGTH	PART NUMBER	£
9	+500 mm	380-EXT-09	33.00
15	+500 mm	380-EXT-15	50.00
25	+500 mm	380-EXT-25	70.00
37	+500 mm	380-EXT-37	116.00
50	+500 mm	380-EXT-50	138.00

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



2.1 CM FEEDTHROUGHS

-> Page 20

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



2.1 CM SETS

-> Page 21

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



2.3 CM: CONNECTORS

-> Page 22

Industry standard air side sockets
PEEK vacuum side sockets



2.4 CM: IN-VACUUM CABLES

-> Page 23

Vacuum ready cables for the Circular Miniature Feedthroughs



2.5 DUAL IN-LINE (DIL)

-> Page 24

Dual In-line Feedthroughs
for direct connection to PCBs



TOOLS FOR CABLE STRIPPING AND CRIMPING

-> Page 76 - 77

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.

Specifications

Compliance	IEC60130-9
Pin Diameter	1.3mm (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	<5x10 ⁻¹⁰ mbar l/s He

Circular Miniature Feedthroughs 6 Pin High Current Versions

FLANGE	No. OF PINS	PART NUMBER	£
WELD	6	220-CM6	145.00
16CF	6	220-CM6-C16	156.00
40CF	6	220-CM6-C40	174.00
40CF	12 (2x6)	220-CM6-C40-2	345.00
63CF	12 (2x6)	220-CM6-C63-2	348.00
63CF	18 (3x6)	220-CM6-C63-3	522.00

Circular Miniature Feedthroughs 12 Pin Versions

FLANGE	No. OF PINS	PART NUMBER	£
WELD	12	220-CM12	191.00
16CF	12	220-CM12-C16	213.00
40CF	12	220-CM12-C40	230.00
40CF	24 (2x12)	220-CM12-C40-2	456.00
63CF	24 (2x12)	220-CM12-C63-2	461.00
63CF	36 (3x12)	220-CM12-C63-3	691.00

Circular Miniature Feedthroughs 19 Pin Versions

FLANGE	No. OF PINS	PART NUMBER	£
WELD	19	220-CM19	244.00
16CF	19	220-CM19-C16	278.00
40CF	19	220-CM19-C40	316.00
40CF	38 (2x19)	220-CM19-C40-2	587.00
63CF	38 (2x19)	220-CM19-C63-2	591.00
63CF	57 (3x19)	220-CM19-C63-3	887.00



220-CM12-C40-2
air side view



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

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

The sets contain:

- Air side connector
- Vacuum feedthrough
- Vacuum side connector including pins

Optional vacuum side housing with strain relief

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



6 Pin High Current Circular Miniature Feedthrough Sets on CF Flanges with Air and Vacuum Connectors

FLANGE	No. OF PINS	PART NUMBER	£
16CF	6	220-SET6-C16	236.00
40CF	6	220-SET6-C40	254.00
40CF	12 (2x6)	220-SET6-C40-2	423.00
63CF	12 (2x6)	220-SET6-C63-2	428.00

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

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

FLANGE	No. OF PINS	PART NUMBER	£
16CF	12	220-SET12-C16	306.00
40CF	12	220-SET12-C40	324.00
40CF	24 (2x12)	220-SET12-C40-2	550.00
63CF	24 (2x12)	220-SET12-C63-2	554.00

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

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

FLANGE	No. OF PINS	PART NUMBER	£
16CF	19	220-SET19-C16	398.00
40CF	19	220-SET19-C40	415.00
40CF	38 (2x19)	220-SET19-C40-2	706.00
63CF	38 (2x19)	220-SET19-C63-2	711.00

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

Circular Miniature Feedthrough Sets Strain Relief option for all sets

No. OF PINS	PART NUMBER	£
6	220-SR6	73.00
12/ 19	220-SR	73.00



220-SR Housing with Strain Relief clamp

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



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

No. OF PINS	TYPE	PART NUMBER	£
6	STANDARD	220-CON6	68.00
12	STANDARD	220-CON12	77.00
19	STANDARD	220-CON19	103.00



Back shell with pins during assembly

Vacuum Sockets including Standard Pins
Type with Housing and Strain Relief

No. OF PINS	TYPE	PART NUMBER	£
6	HOUSING	220-CON6-SR	141.00
12	HOUSING	220-CON12-SR	149.00
19	HOUSING	220-CON19-SR	176.00



Specifications Pins

Vacuum:	UHV
Materials	Phospor Bronze, 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	£
Standard	12	220-CM-PINF-12	16.50
Standard	20	220-CM-PINF-20	25.00
Small	12	220-CM-PINF-12-S	18.00
Small	20	220-CM-PINF-20-S	27.00

The 6-pin Versions use the pins 360-CRBC-1.3

See page 52!

Air Side Sockets
Straight and 90° types

No. OF PINS	TYPE	PART NUMBER	£
6	STRAIGHT	220-CON6-AIR	13.00
6	90°	220-CON6-AIR90	19.00
12	STRAIGHT	220-CON12-AIR	15.00
12	90°	220-CON12-AIR90	21.00
19	STRAIGHT	220-CON19-AIR	21.00
19	90°	220-CON19-AIR90	28.00



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), alternatively KAPM-060 and KAPM-100 types are available to order.

Specifications

Vacuum Side Cables	UHV
Temp.	-200°C to 250°C
Materials	Kapton coated Copper (311-KAPM-075 as standard)
Air Side Cables	
Temp.	-40°C to 80°C
Materials	PVC isolated Copper



Air side cable is available: We offer shielded twisted pair wire with 6 / 12 / 20 conductors! Please ask for a quote

Vacuum Ready Cable for CM Series Standard Socket without Braiding

No. OF PINS	LENGTH	PART NUMBER	£
6	250	380-CM6-250	144.00
6	500	380-CM6-500	170.00
12	250	380-CM12-250	213.00
12	500	380-CM12-500	245.00
19	250	380-CM19-250	300.00
19	500	380-CM19-500	335.00

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

No. OF PINS	LENGTH	PART NUMBER	£
6	250	380-CM6-250-SRB	234.00
6	500	380-CM6-500-SRB	260.00
12	250	380-CM12-250-SRB	321.00
12	500	380-CM12-500-SRB	336.00
19	250	380-CM19-250-SRB	390.00
19	500	380-CM19-500-SRB	425.00

Air Side Cable for CM Series STRAIGHT types

No. OF PINS	LENGTH	PART NUMBER	£
6	1 m	220-CAB6-AIR	41.00
6	2 m	220-CAB6-AIR-2m	33.00
12	1 m	220-CAB12-AIR	36.00
12	2 m	220-CAB12-AIR-2m	44.50
19	1 m	220-CAB19-AIR	138.00
19	2 m	220-CAB19-AIR-2m	148.00

Air Side Cable for CM Series RIGHT ANGLE types

No. OF PINS	LENGTH	PART NUMBER	£
6	1 m	220-CAB6-AIR90	35.00
6	2 m	220-CAB6-AIR90-2M	40.00
12	1 m	220-CAB12-AIR90	45.00
12	2 m	220-CAB12-AIR90-2M	56.00
19	1 m	220-CAB19-AIR90	POR
19	2 m	220-CAB19-AIR90-2M	POR

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	1 A
Pin spacing	2mm pitch



230-DIL40M-C63

Crimp pin
360-CRF-05Vacuum side
connectorVacuum side
connector with
optional housingDual In-line Feedthroughs
2mm x 2mm pitch

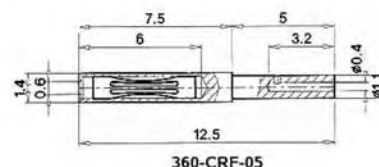
FLANGE	No. OF PINS	PART NUMBER	£
WELD	40	230-DIL40M	312.00
63CF	40	230-DIL40M-C63	514.00
63CF	80	230-DIL80M-C63-2	852.00
63CF	120	230-DIL120M-C63-3	1,260.00
100CF	40	230-DIL40M-C100	544.00
100CF	80	230-DIL80M-C100-2	896.00
100CF	120	230-DIL120M-C100-3	1,314.00
100CF	160	230-DIL160M-C100-4	1,610.00

Dual In-line Feedthroughs
Connectors for Air and Vacuum

VACUUM	TYPE	PART NUMBER	£
AIR	IDC	230-CON40M-IDC-AIR	4.50
AIR	SOLDER	230-CON40M-W-AIR	4.50
VACUUM	PEEK	230-CON40M-PK	168.00

Dual In-line Feedthroughs
Pins for vacuum side

VACUUM	No. PER PKT	PART NUMBER	£
VACUUM	10	360-CRF-05-10	39.00
VACUUM	40	360-CRF-05-40	114.00



360-CRF-05

Dual In-line Feedthroughs
Air side ribbon cable 1m

VACUUM	LENGTH	PART NUMBER	£
AIR	1 m	314-RIB40-1-AIR	15.50

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

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



3.1 COAXIAL: BNC

-> Page 26

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



3.2 COAXIAL: BNC 50Ω

-> Page 27

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



3.3 COAXIAL: SMA 18GHz

-> Page 28 - 29

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



3.4 COAXIAL: MHV

-> Page 30

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



3.5 COAXIAL: 50Ω SMB

-> Page 31

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



3.6 COAXIAL: SHV

-> Page 32 - 33

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



3.7 COAXIAL: SHV10 & SHV20

-> Page 34

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



3.8 COAXIAL: TYPE K 40GHz

-> Page 35

Type K 40GHz Bulkhead Feedthrough



3.9 COAXIAL: TYPE N and 7/16

-> Page 36

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



3.10 COAXIAL: MICRODOT

-> Page 37

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

3.11 COAXIAL: CONNECTORS

-> Page 38

Plugs & Sockets for Coaxial Feedthroughs

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 ⁻¹⁰ 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

FLANGE	PINS	PART NUMBER	£
WELD	1	241-BNC	29.00
16CF	1	241-BNC-C16	63.00
40CF	1	241-BNC-C40	81.00
40CF	2	241-BNC-C40-2	121.00
40CF	3	241-BNC-C40-3	162.00
40CF	4	241-BNC-C40-4	203.00
16KF	1	241-BNC-K16	63.00
40KF	1	241-BNC-K40	81.00
40KF	2	241-BNC-K40-2	113.00
40KF	3	241-BNC-K40-3	162.00
40KF	4	241-BNC-K40-4	203.00

Air side sockets are included

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

LENGTH MM	SOCKETS	PART NUMBER	£
500 mm	1	380-IVCX-500	182.00
1000 mm	1	380-IVCX-1000	196.00

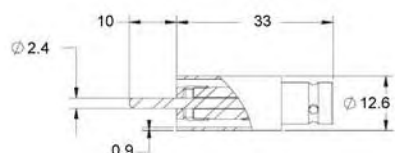
BNC Standard Type 500V Co-axial GROUNDED SHIELD 1 to 4 pins DOUBLE SIDED CF and KF flanges

FLANGE	PINS	PART NUMBER	£
WELD	1	241-BNCD	148.00
16CF	1	241-BNCD-C16	198.00
40CF	2	241-BNCD-C40-2	360.00
40CF	3	241-BNCD-C40-3	522.00
16KF	1	241-BNCD-K16	198.00
40KF	2	241-BNCD-K40-2	360.00

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	£
NONE	SOCKET ONLY	245-CON-BNC	38.00
500 mm	1	380-BNC-MX-500	87.00
1000 mm	1	380-BNC-MX-1000	103.00
500 mm	2	380-BNC-MM-500	141.00
1000 mm	2	380-BNC-MM-1000	157.00



Weldable BNC feedthrough



BNC feedthrough on a 16CF Flange



In Vacuum Coax cable (IVCX) with user end.

IVCX cables fit single sided BNC feedthroughs.



Double Sided BNC on 16CF Flange.

241-BNCD Dimensions

Weld ø:	19 mm
In Vacuum Length	43 mm for weldable 40 mm for CF40 29 mm for CF16



BNC vacuum side connector with 50 Ohm Kapton® Cable

50Ω 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-ø	2.4mm, 13mm long (single sided)
Voltage	500V DC (limited by plug)
Current	3A
Temp.	-200°C to 300°C
Leak rate	<5x10 ⁻¹⁰ 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	£
WELD	1	242-BNC50	102.00
16CF	1	242-BNC50-C16	143.00
40CF	1	242-BNC50-C40	147.00
40CF	2	242-BNC50-C40-2	269.00
40CF	3	242-BNC50-C40-3	391.00
40CF	4	242-BNC50-C40-4	504.00
16KF	1	242-BNC50-K16	96.00
40KF	1	242-BNC50-K40	98.00
40KF	2	242-BNC50-K40-2	265.00
40KF	3	242-BNC50-K40-3	387.00
40KF	4	242-BNC50-K40-4	500.00

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	£
WELD	1	242-BNCD50	181.00
16CF	1	242-BNCD50-C16	241.00
40CF	2	242-BNCD50-C40-2	438.00
16KF*	1	242-BNCD50-K16	241.00
40KF	2	242-BNCD50-K40-2	438.00

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	£
WELD	1 SINGLE	242-BNCF50	178.00
16CF	1 SINGLE	242-BNCF50-C16	202.00
40CF	2 SINGLE	242-BNCF50-C40-2	391.00
WELD	1 DOUBLE	242-BNCDF50	265.00
16CF	1 DOUBLE	242-BNCDF50-C16	335.00
40CF	1 DOUBLE	242-BNCDF50-C40	341.00
40CF	2 DOUBLE	242-BNCDF50-C40-2	565.00

Air side connectors are included



SMA 50 Ω Miniature Co-axial Feedthroughs

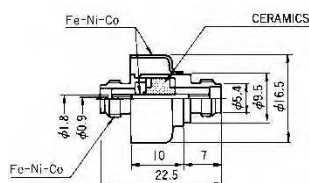
18GHz High Frequency version

- True 50 Ω , 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 50 Ω plugs.



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 <5x10 ⁻¹⁰ mbar l/s)
Temperature	-200°C to 300°C
Electrical	1000V DC, 3A max
Impedance	50 Ohm
Frequency	DC to 6.5 GHz
Pin	1.8 mm ϕ , 5 mm long (single sided)
Weld- ϕ	9.5 mm for 242-SMA50 16.5 mm for 242-SMAD/ SMADF
Connector	Male SMA Plug
Cable	311-KAP50/ KAP50-S

SMA High Frequency 50 Ohm Feedthrough SINGLE SIDED - GROUNDED SHIELD

FLANGE	PINS	PART NUMBER	£
WELD	1	242-SMA50	196.00
16CF	1	242-SMA50-C16	254.00
40CF	1	242-SMA50-C40	260.00
40CF	2	242-SMA50-C40-2	467.00
40CF	3	242-SMA50-C40-3	670.00
40CF	4	242-SMA50-C40-4	865.00

Versions on KF flanges are also available

SMA High Frequency 50 Ohm Feedthrough DOUBLE SIDED - GROUNDED SHIELD

FLANGE	PINS	PART NUMBER	£
WELD	1	242-SMAD50	265.00
16CF	1	242-SMAD50-C16	330.00
40CF	1	242-SMAD50-C40	336.00
40CF	2	242-SMAD50-C40-2	608.00
40CF	3	242-SMAD50-C40-3	879.00
40CF	4	242-SMAD50-C40-4	1,218.00

Versions on KF flanges are also available

SMA High Frequency 50 Ohm Feedthrough DOUBLE SIDED - FLOATING SHIELD

FLANGE	PINS	PART NUMBER	£
WELD	1	242-SMADF50	317.00
16CF	1	242-SMADF50-C16	382.00
40CF	1	242-SMADF50-C40	388.00
40CF	2	242-SMADF50-C40-2	706.00
40CF	3	242-SMADF50-C40-3	1,024.00
40CF	4	242-SMADF50-C40-4	1,341.00

Versions on KF flanges are also available

High Frequency SMAD18G Series

- True 50 Ω , 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 50 Ω plugs.
- UHV compatible 50 Ω Plugs and Cables available for the vacuum side.

Specification 242-SMAD18G

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

SMA HIGH FREQUENCY, 18GHZ, 50 OHM FEEDTHROUGH DOUBLE SIDED - GROUNDED SHIELD

FLANGE	PINS	PART NUMBER	£
16KF	1	242-SMAD18G-K16	398.00
16CF	1	242-SMAD18G-C16	400.00
40CF	1	242-SMAD18G-C40	405.00
40CF	2	242-SMAD18G-C40-2	705.00
40CF	3	242-SMAD18G-C40-3	1,030.00
40CF	4	242-SMAD18G-C40-4	1,360.00



If 18GHz is not enough, Allectra offers microwave F/Ts SMA-K Type (2.92mm) for up to 40 GHz. Please see page 35.

SMA Connectors and Ready Made Cables

SMA connectors are offered in Male (Plug) and Female (Socket) versions

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
Test voltage:	500V DC
Test Insulation:	Min. 1GΩ pin to shield

Connector dimensions

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

Cable ø	2.7mm Standard 0.85mm Type small
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It is also possible to mount non-magnetic connectors to the cable.

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-KAP50-S (ø 0.85 mm) thin 50 Ohm UHV compatible
Test voltage	500V DC
Test insulation	min 1GΩ pin to shield

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

LENGTH	IMPEDANCE	PART NUMBER	£
500 mm	50Ω	380-SMA-MX-500	85.00
1000 mm	50Ω	380-SMA-MX-1000	105.00

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

LENGTH	IMPEDANCE	PART NUMBER	£
500 mm	50Ω	380-SMA-MM-500	138.00
1000 mm	50Ω	380-SMA-MM-1000	158.00

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

LENGTH	IMPEDANCE	PART NUMBER	£
500 mm	50Ω	380-SMA-MF-500	147.00
1000 mm	50Ω	380-SMA-MF-1000	167.00

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

LENGTH	IMPEDANCE	PART NUMBER	£
500 mm	50Ω	380-SMA-MX-500-S	78.00
1000 mm	50Ω	380-SMA-MX-1000-S	94.00

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

LENGTH	IMPEDANCE	PART NUMBER	£
500 mm	50Ω	380-SMA-MM-500-S	124.00
1000 mm	50Ω	380-SMA-MM-1000-S	140.00

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 ⁻¹⁰ mbar l/s
Air Side Connectors are included	

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

FLANGE	PINS	PART NUMBER	£
WELD	1	241-MHV	28.00
16CF	1	241-MHV-C16	72.00
40CF	1	241-MHV-C40	81.00
40CF	2	241-MHV-C40-2	121.00
40CF	3	241-MHV-C40-3	171.00
40CF	4	241-MHV-C40-4	220.00

KF Versions are available on request

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 ⁻¹⁰ mbar l/s
Air Side Connectors are not included	

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

FLANGE	PINS	PART NUMBER	£
WELD	1	242-MHV50	102.00
16CF	1	242-MHV50-C16	143.00
40CF	1	242-MHV50-C40	147.00
40CF	2	242-MHV50-C40-2	269.00
40CF	3	242-MHV50-C40-3	391.00
40CF	4	242-MHV50-C40-4	504.00

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

FLANGE	PINS	PART NUMBER	£
WELD	1	242-MHVD50	269.00
16CF	1	242-MHVD50-C16	311.00
40CF	2	242-MHVD50-C40-2	572.00

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

FLANGE	PINS	PART NUMBER	£
WELD	1 SINGLE	242-MHVF50	278.00
16CF	1 SINGLE	242-MHVF50-C16	320.00
WELD	1 DOUBLE	242-MHVD50	313.00
16CF	1 DOUBLE	242-MHVD50-C16	346.00
40CF	1 DOUBLE	242-MHVD50-C40	353.00

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

CABLE MM	SOCKETS	PART NUMBER	£
NONE	1	245-CON-MHV	66.00
500 mm	1	380-MHV-MX-500	87.00
1000 mm	1	380-MHV-MX-1000	110.00
500 mm	2	380-MHV-MM-500	140.00
1000 mm	2	380-MHV-MM-1000	157.00



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

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 ⁻¹⁰ mbar l/s
Temp.	-200°C to 220°C
Frequency	DC to 1 GHz
Current	1 A max
Test-Voltage	500 V DC
Test-Resistivity	>1GΩ (pins to ground)
Impedance	50Ω
Cable	311-KAP50/ 311-KAP50S/ RG174A
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

FLANGE	PINS	PART NUMBER	£
16CF	1	242-SMB-C16	195.00
40CF	1	242-SMB-C40	200.00
40CF	2	242-SMB-C40-2	391.00
40CF	3	242-SMB-C40-3	591.00
40CF	4	242-SMB-C40-4	778.00

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

FLANGE	PINS	PART NUMBER	£
16KF	1	242-SMB-K16	191.00
40KF	1	242-SMB-K40	195.00
40KF	2	242-SMB-K40-2	378.00
40KF	3	242-SMB-K40-3	586.00
40KF	4	242-SMB-K40-4	773.00

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

FLANGE	PINS	PART NUMBER	£
16CF	1	242-SMBD-C16	213.00
40CF	1	242-SMBD-C40	217.00
40CF	2	242-SMBD-C40-2	413.00
40CF	3	242-SMBD-C40-3	630.00
40CF	4	242-SMBD-C40-4	826.00

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

FLANGE	PINS	PART NUMBER	£
16KF	1	242-SMBD-K16	208.00
40KF	1	242-SMBD-K40	213.00
40KF	2	242-SMBD-K40-2	408.00
40KF	3	242-SMBD-K40-3	626.00
40KF	4	242-SMBD-K40-4	821.00

SMB In-Vacuum 50 Ohm Cables SMB to open end

LENGTH	SOCKETS	PART NUMBER	£
500 mm	1	380-SMB-FX-500	82.00
1000 mm	1	380-SMB-FX-1000	102.00

Safe High Voltage (SHV) 5 KV Feedthroughs

Standard & 50Ω 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 ⁻¹⁰ mbar l/s
Temp.	-200°C to 300°C
Current	5A max
Test-Voltage	5000 V DC
Test-Resistivity	>1GΩ (pins to ground)
Impedance	not constant
Cable	RG59B/ U
Weld-ø	12.6 mm
Air side connectors are included	

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

FLANGE	PINS	PART NUMBER	£
WELD	1	241-SHV	54.00
16CF	1	241-SHV-C16	99.00
40CF	1	241-SHV-C40	117.00
40CF	2	241-SHV-C40-2	180.00
40CF	3	241-SHV-C40-3	261.00
40CF	4	241-SHV-C40-4	328.00

Versions on KF Flanges are also available

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

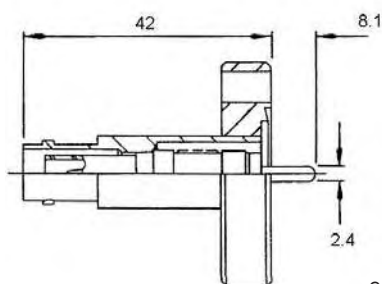
FLANGE	PINS	PART NUMBER	£
WELD	1	241-SHVE	67.00
16CF	1	241-SHVE-C16	112.00
40CF	1	241-SHVE-C40	130.00
40CF	2	241-SHVE-C40-2	207.00
40CF	3	241-SHVE-C40-3	301.00
40CF	4	241-SHVE-C40-4	387.00

Versions on KF Flanges are also available

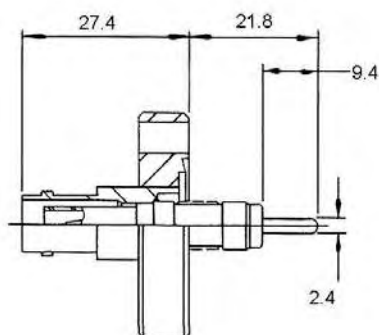
SHV 5KV Coaxial
DOUBLE SIDED - GROUNDED SHIELD

FLANGE	PINS	PART NUMBER	£
WELD	1	241-SHVD	225.00
16CF	1	241-SHVD-C16	277.00
40CF	1	241-SHVD-C40	288.00
40CF	2	241-SHVD-C40-2	468.00
16KF	1	241-SHVD-K16	265.00
40KF	1	241-SHVD-K40	270.00
40KF	2	241-SHVD-K40-2	459.00

Versions on KF Flanges are also available



241-SHV-C16



241-SHVE-C16

SHV50 50 Ohm 6KV Feedthroughs

SHV Vacuum Ready Cables

A special version of the versatile SHV type with 50 Ω impedance and increased voltage rating

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



General Specifications SHV50 Ω

Type	242-SHV50
Vacuum	UHV
Pin- ϕ	2.4mm
Leak rate	<5x10 ⁻¹⁰ mbar l/s
Temp.	-200°C to 300°C
Current	5A max
Test-Voltage	6000V DC
Test-Resistivity	>1G Ω (pins to ground)
Impedance	50 Ω
Frequency range	DC to 100 MHz
Cable	RG59B/U
Weld- ϕ	12.6 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

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

FLANGE	PINS	PART NUMBER	£
WELD	1	242-SHV50	172.00
16CF	1	242-SHV50-C16	220.00
40CF	1	242-SHV50-C40	224.00
40CF	2	242-SHV50-C40-2	439.00
40CF	3	242-SHV50-C40-3	652.00
40CF	4	242-SHV50-C40-4	886.00

Versions on KF Flanges are also available

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

FLANGE	PINS	PART NUMBER	£
WELD	1	242-SHVD50	246.00
40CF	1	242-SHVD50-C40	316.00
40CF	2	242-SHVD50-C40-2	603.00
40CF	3*	242-SHVD50-C40-3	856.00

*) 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	£
WELD	1	242-SHVDF50	281.00
40CF	1	242-SHVDF50-C40	352.00
40CF	2	242-SHVDF50-C40-2	686.00
40CF	3*	242-SHVDF50-C40-3	954.00

*) Min tube ID of 38mm required

Versions on KF Flanges are also available

SHV 50 Ω Coaxial In-vacuum Cables SHV5 to open end

LENGTH	SOCKETS	PART NUMBER	£
500 mm	1	380-SHV5-MX-500	118.00
1000 mm	1	380-SHV5-MX-1000	139.00

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 ⁻¹⁰ mbar l/s
Temp.	-100°C to 300°C
Current	5A max
Test-Voltage	10KV DC
Impedance	not constant
Weld-ø	12.6 mm
Air side connector INCLUDED (for RG58 cable)	



Weld version - 10 KV

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

FLANGE	PINS	PART NUMBER	£
WELD	1	250-SHV10	126.00
16CF	1	250-SHV10-C16	162.00
40CF	1	250-SHV10-C40	171.00
40CF	2	250-SHV10-C40-2	310.00
40CF	3	250-SHV10-C40-3	450.00
40CF	4	250-SHV10-C40-4	585.00

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

FLANGE	PINS	PART NUMBER	£
WELD	1	250-SHVE10	139.00
16CF	1	250-SHVE10-C16	175.00
40CF	1	250-SHVE10-C40	184.00
40CF	2	250-SHVE10-C40-2	324.00
40CF	3	250-SHVE10-C40-3	468.00
40CF	4	250-SHVE10-C40-4	612.00

General Specifications SHV20

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



Weld version - 20 KV

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

**SHV 20KV RECESSED type Coaxial
SINGLE ENDED versions - Grounded shield**

FLANGE	PINS	PART NUMBER	£
WELD	1	250-SHV20	175.00
16CF	1	250-SHV20-C16	225.00
40CF	1	250-SHV20-C40	234.00
40CF	2	250-SHV20-C40-2	454.00

**SHV 20KV EXPOSED type Coaxial
SINGLE ENDED versions - Grounded shield**

FLANGE	PINS	PART NUMBER	£
WELD	1	250-SHVE20	175.00
16CF	1	250-SHVE20-C16	225.00
40CF	1	250-SHVE20-C40	234.00
40CF	2	250-SHVE20-C40-2	454.00

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

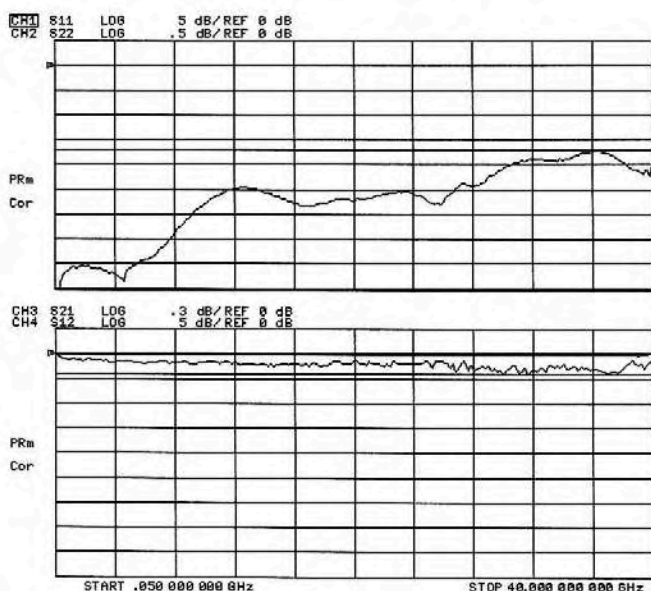
Vacuum	down to 10^{-9} mbar (O-ring sealed)
Leak rate	$< 8 \times 10^{-10}$ mbar l/s He
Materials	SS, CuBe, Glass, Viton
Frequency	DC to 40GHz
VSWR	1.25:1
Insertion loss	0.25dB max
Impedance	50 Ω
Voltage	1KV RMS
Temp.	-65°C to 125°C
Connectors	2.92 mm Female (K-Type)

292 mm K Type Microwave Feedthroughs 40GHz DOUBLE SIDED

FLANGE	PINS	PART NUMBER	£
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.



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.

50Ω Type N 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 7/16 Feedthroughs can be offered as High Vacuum versions on KF flanges. Please call Sales Office.

**General Specifications**

Type	Grounded & Floating Shield
Impedance	50Ω
Pin-ø	2.4 mm/ Standard Type N
Voltage	500V DC
Current	3A
Temp.	-200°C to 450°C
Leak rate	<5x10 ⁻¹⁰ mbar l/s
Air Side Connectors are included (for RG58 cable)	

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

FLANGE	PINS	PART NUMBER	£
WELD ø16mm	1	242-N50	139,00
16CF	1	242-N50-C16	195,00
40CF	1	242-N50-C40	200,00
40CF	2	242-N50-C40-2	369,00

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

FLANGE	PINS	PART NUMBER	£
WELD ø24mm	1	242-ND50	191,00
40CF	1	242-ND50-C40	252,00
63CF	2	242-ND50-C63-2	505,00
63CF	3	242-ND50-C63-3	731,00

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

FLANGE	PINS	PART NUMBER	£
WELD ø24mm	1	242-NDF50	268,00
40CF	1	242-NDF50-C40	329,00
63CF	2	242-NDF50-C63-2	658,00
63CF	3	242-NDF50-C63-3	982,00

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

LENGTH	SOCKETS	PART NUMBER	£
NONE	1	245-CON-N	58,00
500 mm	1	380-N50-FX-500	117,00
1000 mm	1	380-N50-FX-1000	139,00



242-NDF50
245-CON-N



Ready made N-
Type cable for
Vacuum use

7/16 Feedthroughs for High Vacuum applications are available on 50KF Flanges. Please ask for details.

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 $<5 \times 10^{-10}$ mbar l/s

Temp. -100°C to 250°C

Voltage 500V DC

Materials Molybdenum, Stainless Steel

Water tube 4.8mm (3/16") OD



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



710-IVC-750



Microdot crystal sensor Feedthrough Between series Microdot to BNC

FLANGE	PINS	PART NUMBER	£
WELD	1	243-MDOT-BNC	247,00
16CF	1	243-MDOT-BNC-C16	305,00
40CF	1	243-MDOT-BNC-C40	313,00
16KF	1	243-MDOT-BNC-K16	305,00

Air side connectors are not included

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

COAX	WATER	PART NUMBER	£
1	2	710-BNC1-W2-C40	413,00
1	3	710-BNC1-W3-C40	457,00
2	2	710-BNC2-W2-C40	681,00
2	3	710-BNC2-W3-C40	718,00

Versions on KF flanges available on request

Microdot crystal sensor Feedthrough In-vacuum Cables

LENGTH	SOCKETS	PART NUMBER	£
250 mm	2	710-IVC-250	73,00
750 mm	2	710-IVC-750	80,00
910 mm	2	710-IVC-910	103,00

Microdot In-Vacuum Cables Microdot to Open End or SMA

LENGTH	SOCKETS	PART NUMBER	£
NONE	1xMIC	245-CON-MIC	88,00
500 mm	1xMIC	380-MIC-MX-500	136,00
500 mm	2xMIC	380-MIC-MM-500	240,00
500 mm	1x MIC+1xSMA	380-MIC-SMA-500	189,00
500 mm	1x MIC+1xBNC	380-MIC-BNC-500	189,00

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 Temp.	UHV or High Vacuum -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 90o

TYPE	FOR CABLE	PART NUMBER	£
STR	KAP50	245-CON-SMA	38,00
STR CER*	KAP50	245-CON-SMA-CER	63,00
STR SMALL	KAP50S	245-CON-SMA-S	42,00
90°	KAP50	245-CON-SMA-90	39,00
STR NM	KAP50	245-CON-SMA-NM	52,00
90° NM	KAP50	245-CON-SMA-NM-90	52,00
Female	KAP50	245-CON-SMA-F	46,00
Female CER*	KAP50	245-CON-SMA-CER-F	79,00

* not 50Ω

Vacuum Side Sockets Fit to double sided Feedthroughs

F/T	FOR CABLE	PART NUMBER	£
BNC(50)	KAP50	245-CON-BNC	38,00
BNC(50)	KAP50S	245-CON-BNC-S	49,00
MHV(50)	KAP50	245-CON-MHV	66,00
SHV	KAP50	245-CON-SHV	70,00
N	KAP50	245-CON-N	58,00
MICRODOT	KAP50	245-CON-MIC	88,00
SMB	KAP50	245-CON-SMB	39,00
SMB	KAP50S	245-CON-SMB-S	42,00

Air Side Connectors Fit to Feedthroughs

F/T	FOR CABLE	PART NUMBER	£
SMA	RG174	241-CON-SMA-RG174	40,00
BNC	RG58	241-CON-BNC-RG58	6,00
SMB	RG174	241-CON-SMB-RG174	40,00
MHV	RG59	241-CON-MHV-RG58	12,00
SHV	RG59	241-CON-SHV-RG59	20,00
SHV-10	RG58C	241-CON-SHV10	60,00
SHV-20	RG213	241-CON-SHV20	126,00



Various Vacuum Side connectors:

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

245-CON-SMA-F (female)

245-CON-MHV

245-CON-SHV

245-CON-N

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

4.1 POWER: LOW VOLTAGE TO 1KV

-> Page 40

Molybdenum, Stainless Steel and Copper Conductors



4.2 POWER – 5KV up to 20 A

-> Page 41 - 42

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 43

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



4.4 MULTI-WAY WITH MS SOCKETS

-> Page 44

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



4.5 12KV WITH MS SOCKETS

-> Page 45

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



4.6 POWER GLOVE 5KV TO 20KV

-> Page 46 - 47

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



4.7 HIGH VOLTAGE

-> Page 48

Individual High Voltage Feedthroughs with fluted or straight ceramics



4.8 POWER: BASEPLATE TYPES

-> Page 49

1" (25.4mm) Baseplate Feedthroughs- various types

4.9 CERAMIC BREAKS

-> Page 50 - 51

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

4.10 POWER: CONNECTORS

-> Page 52

Crimps, Push-ons, Screw-ons and Clamps

**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 <5x10 ⁻¹⁰ mbar l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	500V, 8A max per Pin
Pin-ø	0.8 mm
Pin material	Molybdenum (Cu, Ni, SS optional)
Weld ø	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**

FLANGE	PINS	PART NUMBER	£
WELD	1	261-08MO500	27.00
WELD	2	264-08MO500-2	54.00
WELD	4	264-08MO500-4	63.00
WELD	8	264-08MO500-8	90.00
16CF	2	264-08MO500-2-C16	99.00
16CF	4	264-08MO500-4-C16	108.00
16CF	8	264-08MO500-8-C16	130.00

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

General Specification 1KV types

Vacuum	UHV (leak rate <5x10 ⁻¹⁰ mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	1KV, max current see below
Pin-ø	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 ø	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 version Kovar rated 7A)**

FLANGE	PINS	PART NUMBER	£
WELD	1	261-13SS1K	27.00
WELD	2	264-13SS1K-2	45.00
WELD	4	264-13SS1K-4	67.00
WELD	8*	264-13KO1K-8	90.00
16CF	2	264-13SS1K-2-C16	81.00
16CF	4	264-13SS1K-4-C16	94.00
16CF	8*	264-13KO1K-8-C16	126.00
16KF	2	264-13SS1K-2-K16	81.00
16KF	4	264-13SS1K-4-K16	94.00
16KF	8*	264-13KO1K-8-K16	121.00

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

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

FLANGE	PINS	PART NUMBER	£
WELD	1	261-13CU1K	27.00
WELD	2	264-13CU1K-2	45.00
WELD	4	264-13CU1K-4	67.00
WELD	8	264-13CU1K-8	90.00
16CF	2	264-13CU1K-2-C16	81.00
16CF	4	264-13CU1K-4-C16	94.00
16CF	8	264-13CU1K-8-C16	126.00
16KF	2	264-13CU1K-2-K16	81.00
16KF	4	264-13CU1K-4-K16	94.00
16KF	8	264-13CU1K-8-K16	121.00

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.

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

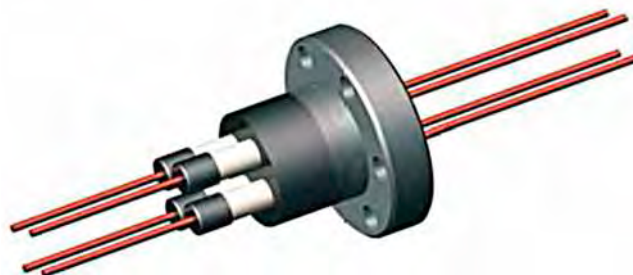
General Specification 5KV types

Vacuum	UHV (leak rate <5x10 ⁻¹⁰ mbar-l/s)
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

FLANGE	PINS	PART NUMBER	£
WELD	1	261-13CU5K	27.00
WELD	2	264-13CU5K-2	58.00
WELD	4	264-13CU5K-4	67.00
16CF	2	264-13CU5K-2-C16	94.00
16CF	4	264-13CU5K-4-C16	103.00
16KF	2	264-13CU5K-2-K16	94.00
16KF	4	264-13CU5K-4-K16	103.00

5KV 7A Nickel Conductor Conductor 1.3 mm

FLANGE	PINS	PART NUMBER	£
WELD	1	261-13NI5K	27.00
WELD	2	264-13NI5K-2	58.00
WELD	4	264-13NI5K-4	67.00
16CF	2	264-13NI5K-2-C16	94.00
16CF	4	264-13NI5K-4-C16	103.00
16KF	2	264-13NI5K-2-K16	94.00
16KF	4	264-13NI5K-4-K16	103.00

5KV 1A Stainless Steel Conductor Conductor 1.3 mm

FLANGE	PINS	PART NUMBER	£
WELD	1	261-13SS5K	27.00
WELD	2	264-13SS5K-2	58.00
WELD	4	264-13SS5K-4	67.00
16CF	2	264-13SS5K-2-C16	94.00
16CF	4	264-13SS5K-4-C16	103.00
16KF	2	264-13SS5K-2-K16	94.00
16KF	4	264-13SS5K-4-K16	103.00

4.2 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 $<5 \times 10^{-10}$ 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

FLANGE	PINS	PART NUMBER	£
WELD	1	261-24CU5K	27.00
16CF	1	261-24CU5K-C16	67.00
16CF	2	264-24CU5K-2-C16	126.00
40CF	4	264-24CU5K-4-C40	166.00
40CF	8	264-24CU5K-8-C40	270.00
40CF	12	264-24CU5K-12-C40	328.00
16KF	1	261-24CU5K-K16	67.00
16KF	2	264-24CU5K-2-K16	121.00
40KF	4	264-24CU5K-4-K40	166.00
40KF	8	264-24CU5K-8-K40	270.00
40KF	12	264-24CU5K-12-K40	328.00

Note: also available with Nickel (15A) conductors

General Specification 10KV types

Vacuum	UHV (leak rate $<5 \times 10^{-10}$ 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

FLANGE	PINS	PART NUMBER	£
WELD	1	261-24CU10K	27.00
16CF	1	261-24CU10K-C16	99.00
16CF	2	264-24CU10K-2-C16	148.00
40CF	4	264-24CU10K-4-C40	202.00
16KF	1	261-24CU10K-K16	99.00
16KF	2	264-24CU10K-2-K16	148.00
40KF	4	264-24CU10K-4-K40	202.00

Note: also available with Nickel (15A) conductors



261-24CU10K

*Crimps see page 52 and versions
with air side Power Glove Cables
on page 46!*

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 $<5 \times 10^{-10}$ 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-CRIMP-6.4

5KV 150A Copper Conductor Conductor 6.35 mm ø

FLANGE	PINS	PART NUMBER	£
16CF	1	261-63CU5K-C16	76.00
40CF	2	264-63CU5K-2-C40	153.00
40CF	3	264-63CU5K-3-C40	202.00
40CF	4	264-63CU5K-4-C40	247.00
16KF	1	261-63CU5K-K16	72.00
40KF	2	264-63CU5K-2-K40	144.00
40KF	3	264-63CU5K-3-K40	193.00
40KF	4	264-63CU5K-4-K40	247.00

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

Specification 3KV 250A types

Vacuum	UHV (leak rate $<5 \times 10^{-10}$ 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

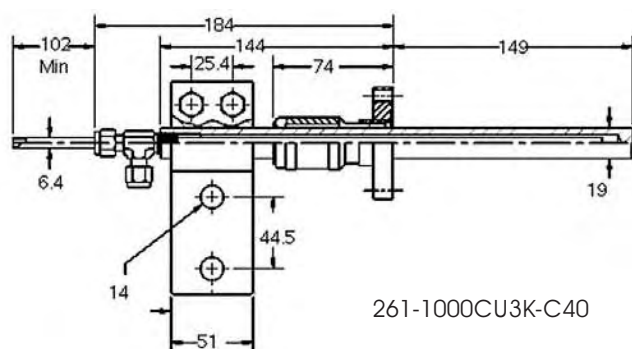
FLANGE	PINS	PART NUMBER	£
WELD	1	261-96CU3K	54.00
16CF	1	261-96CU3K-C16	90.00
16KF	1	261-96CU3K-K16	90.00
1" BOLT	1	261-96CU3K-BP	175.00

Specification 3KV 600A types

Vacuum	UHV (leak rate $<5 \times 10^{-10}$ 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

FLANGE	PINS	PART NUMBER	£
WELD	1	261-190CU3K	130.00
40CF	1	261-190CU3K-C40	180.00
40KF	1	261-190CU3K-K40	180.00



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

FLANGE	PINS	PART NUMBER	£
40CF	1	261-1000CU3K-C40	675.00

4.4 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<5x10 ⁻¹⁰ 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

700V 10A Multi-way 4 to 35 Alumel Conductors 0.76 mm includes MS Circular Air Side Socket

FLANGE	PINS	PART NUMBER	£
16CF	4	221-10AL700-4-C16	171.00
16CF	6	221-10AL700-6-C16	184.00
40CF	6	221-10AL700-6-C40	198.00
16CF	10	221-10AL700-10-C16	297.00
40CF	10	221-10AL700-10-C40	310.00
40CF	20	221-10AL700-20-C40	391.00
40CF	35	221-10AL700-35-C40	675.00
16KF	4	221-10AL700-4-K16	171.00
16KF	6	221-10AL700-6-K16	184.00
16KF	10	221-10AL700-10-K16	297.00
40KF	20	221-10AL700-20-K40	382.00
40KF	35	221-10AL700-35-K40	670.00

Note: all MS types are also available double sided

Note: available as weldables to order



Double sided 4-pin Version on 40CF

Specification MS 23 Amps 700 Volts

Vacuum	UHV (leak rate<5x10 ⁻¹⁰ 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 Conductors 2.4 mm includes MS Circular Air Side Socket

FLANGE	PINS	PART NUMBER	£
40CF	2	221-23CU700-2-C40	243.00
40CF	3	221-23CU700-3-C40	261.00
40CF	4	221-23CU700-4-C40	301.00
40CF	5	221-23CU700-5-C40	324.00
40CF	7	221-23CU700-7-C40	373.00
40CF	8	221-23CU700-8-C40	400.00

Note: also available with Nickel(15A) conductors



221-40MO700-4-C40

Specification MS 40 Amps 700 Volts

Vacuum	UHV (leak rate<5x10 ⁻¹⁰ 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 Conductors 3.6mm includes MS Circular Air Side Socket

FLANGE	PINS	PART NUMBER	£
40CF	2	221-40MO700-2-C40	297.00
40CF	4	221-40MO700-4-C40	360.00
40KF	2	221-40MO700-2-K40	297.00
40KF	4	221-40MO700-4-K40	360.00

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	<5x10 ⁻¹⁰ 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

FLANGE	PINS	PART NUMBER	£
16CF	2	267-075HV12K-2-C16	418.00
16CF	4	267-075HV12K-4-C16	454.00
16CF	7	267-075HV12K-7-C16	495.00
40CF	2	267-075HV12K-2-C40	418.00
40CF	4	267-075HV12K-4-C40	454.00
40CF	7	267-075HV12K-7-C40	495.00
16KF	2	267-075HV12K-2-K16	418.00
16KF	4	267-075HV12K-4-K16	454.00
16KF	7	267-075HV12K-7-K16	495.00
40KF	2	267-075HV12K-2-K40	418.00
40KF	4	267-075HV12K-4-K40	454.00
40KF	7	267-075HV12K-7-K40	495.00

Crimps Beryllium Copper For Conductor 1.3 mm

SIZE	No PER PKT.	PART NUMBER	£
1.3 mm	10	360-CRBC-1.3	35.00

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

Pins	Qty.	PART NUMBER	£
2-4	1	267-CON12K-4	POR
7	1	267-CON12K-7	POR

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.

Power Glove Feedthroughs 5KV to 10KV

- A new design of High Voltage 5KV and 10 KV Feedthrough
- Air side cables with 2.4 m length included
- 1, 2, 4, 6 or 8 Pins option
- 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 ⁻¹⁰ 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: 5A 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 conductor 25A includes 2.4 m Air side cable and High Voltage Glove

FLANGE	PINS	PART NUMBER	£
WELD	1	265-025CU5K	58.00
16CF	1	265-025CU5K-C16	94.00
40CF	2	265-025CU5K-2-C40	171.00
40CF	4	265-025CU5K-4-C40	265.00
40CF	6	265-025CU5K-6-C40	355.00
40CF	8	265-025CU5K-8-C40	450.00

5KV Power Glove Feedthroughs, Nickel conductor 15A includes 2.4 m Air side cable and High Voltage Glove

FLANGE	PINS	PART NUMBER	£
WELD	1	265-015NI5K	58.00
16CF	1	265-015NI5K-C16	94.00
40CF	2	265-015NI5K-2-C40	171.00
40CF	4	265-015NI5K-4-C40	265.00
40CF	6	265-015NI5K-6-C40	355.00
40CF	8	265-015NI5K-8-C40	450.00

5KV Power Glove Feedthroughs, Stainless St. conductor 1A includes 2.4 m Air side cable and High Voltage Glove

FLANGE	PINS	PART NUMBER	£
WELD	1	265-001SS5K	58.00
16CF	1	265-001SS5K-C16	94.00
40CF	2	265-001SS5K-2-C40	171.00
40CF	4	265-001SS5K-4-C40	265.00
40CF	6	265-001SS5K-6-C40	355.00
40CF	8	265-001SS5K-8-C40	450.00

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 ⁻¹⁰ 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 conductor 15A includes 2.4 m Air side and High Voltage Glove

FLANGE	PINS	PART NUMBER
WELD	1	265-015NI10K
16CF	1	265-015NI10K-C16
40CF	2	265-015NI10K-2-C40
40CF	4	265-015NI10K-4-C40
40CF	6	265-015NI10K-6-C40
40CF	8	265-015NI10K-8-C40

10KV Power Glove Feedthroughs, Copper conductor 25A includes 2.4 m Air side cable and High Voltage Glove

FLANGE	PINS	PART NUMBER	£
WELD	1	265-025CU10K	58.00
16CF	1	265-025CU10K-C16	94.00
40CF	2	265-025CU10K-2-C40	171.00
40CF	4	265-025CU10K-4-C40	265.00
40CF	6	265-025CU10K-6-C40	355.00
40CF	8	265-025CU10K-8-C40	450.00

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

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.



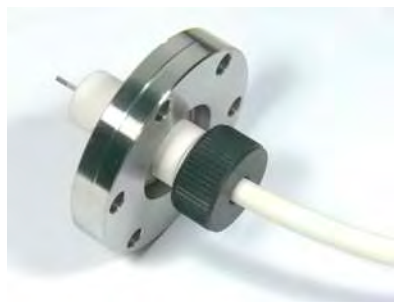
40KV Feedthrough with Cable

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	$<5 \times 10^{-10}$ mbar l/s
Temp.	-200°C to 450°C without cable
Test-Voltage	20KV DC
Test-Resistivity	$>1G\Omega$ (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	$<5 \times 10^{-10}$ 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 conductor 25A includes 2.4 m Air side cable and High Voltage Glove

FLANGE	PINS	PART NUMBER	£
WELD	1	265-025CU20K	80.00
16CF	1	265-025CU20K-C16	158.00
40CF	2	265-025CU20K-2-C40	209.00
40CF	4	265-025CU20K-4-C40	393.00
40CF	6	265-025CU20K-6-C40	POR
40CF	8	265-025CU20K-8-C40	POR

20KV Power Glove Feedthroughs, Nickel conductor 15A includes 2.4 m Air side cable and High Voltage Glove

FLANGE	PINS	PART NUMBER	£
WELD	1	265-015NI20K	80.00
16CF	1	265-015NI20K-C16	158.00
40CF	2	265-015NI20K-2-C40	209.00
40CF	4	265-015NI20K-4-C40	393.00
40CF	6	265-015NI20K-6-C40	POR
40CF	8	265-015NI20K-8-C40	POR

20KV Power Glove Feedthroughs, Stainless St. conductor 1A includes 2.4 m Air side cable and High Voltage Glove

FLANGE	PINS	PART NUMBER	£
WELD	1	265-001SS20K	80.00
16CF	1	265-001SS20K-C16	158.00
40CF	2	265-001SS20K-2-C40	209.00
40CF	4	265-001SS20K-4-C40	393.00
40CF	6	265-001SS20K-6-C40	POR
40CF	8	265-001SS20K-8-C40	POR

40KV Feedthroughs, Stainless St. conductor 1A Air side connector and 9 m cable included

FLANGE	PINS	PART NUMBER	£
WELD	1	266-001SS40K	320.00
40CF	1	266-001SS40K-C40	364.00
40KF	1	266-001SS40K-K40	364.00

4.7 HIGH VOLTAGE – MORE TYPES

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



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<5 x 10 ⁻¹⁰ 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 conductor 75A Conductor 6.35 mm Fluted Ceramic

FLANGE	AMPS	PART NUMBER	£
40CF	75	266-075NI20K-C40	225.00
40CF	150	266-150CU20-C40	225.00

Weldable versions and KF versions available on request

Specification 30KV Fluted Ceramic

Vacuum	UHV (leak rate<5 x 10 ⁻¹⁰ 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 conductor 3A Conductor 2.4 mm

FLANGE	COND.	PART NUMBER	£
WELD	SS	266-003SS30K	130.00
40CF	SS	266-003SS30K-C40	180.00
40CF	Cu	266-030CU30K-C40	180.00

Specification 25KV Fluted Ceramic 2 Pin

Vacuum	UHV (leak rate<5 x 10 ⁻¹⁰ mbar-l/s)
Materials	SS Ceramic
Temp.	-200°C to 450°C
Electrical	25KV 3 A per Pin
Pin	2 x SS, 2.4 mm
Connector	360-PPO-2.4
Air Side	Threaded connection 1/4-28

25KV 3A Feedthrough - 2 PIN Conductors 2.4 mm

FLANGE	COND.	PART NUMBER	£
40CF	SS	266-003SS25K-2-C40	382.00



Specification 60KV Fluted Ceramic

Vacuum	UHV (leak rate<5 x 10 ⁻¹⁰ 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

FLANGE	PINS	PART NUMBER	£
63CF	1	266-030SS60K-C63	837.00

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

SIZE	PINS	PART NUMBER	£
1" BOLT	8	221-005OCT1KV-8-BP	322.00



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 conductors 1.3mm Fits Baseplate with 1" (25.4mm) hole

SIZE	PINS	PART NUMBER	£
1" BOLT	2	264-13CU1K-2-BP	153.00
1" BOLT	4	264-13CU1K-4-BP	202.00
1" BOLT	8	264-13CU1K-8-BP	252.00

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



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

SIZE	PINS	PART NUMBER	£
1" BOLT	1	261-198CU3K-BP	175.00



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

SIZE	PINS	PART NUMBER	£
1" BOLT	1	261-1000WC-BP	184.00

See page 52 for vacuum Side Crimps

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)

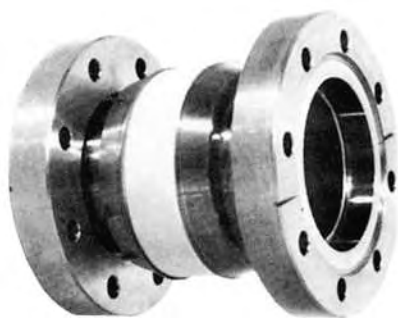


General Specification Ceramic Breaks

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



271-CB-6.4



271-CB-15K-60-C63



271-CB-35K-85-C100

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

TUBE OD	LENGTH	PART NUMBER	£
3/32" (2.4)	58.4	271-CB-2.4	48.00
1/8" (3.2)	59.4	271-CB-3.2	57.00

6KV DC Cryogenic breaks
Tube sizes 1/4" (6.35 mm) and 3/8" (9.5 mm)

TUBE OD	LENGTH	PART NUMBER	£
1/4" (6.35)	76.2	271-CB-6.4	74.00
3/8" (9.5)	76.2	271-CB-9.5	117.00

15KV Vacuum breaks
50.4mm long ceramic, I.D. 31.7 mm

FLANGE	LENGTH	PART NUMBER	£
38.1mm ø	97	271-CB-15K-35	156.00
40CF	107	271-CB-15K-35-C40	265.00
40KF	104	271-CB-15K-35-K40	265.00

20KV Vacuum breaks
25.4 mm long ceramic, I.D. 16.0 mm

FLANGE	LENGTH	PART NUMBER	£
19mm ø	67	271-CB-20K-16	160.00
16CF	92	271-CB-20K-16-C16	247.00
16KF	92	271-CB-20K-16-K16	247.00

35KV Vacuum breaks
117 mm long ceramic, I.D. 16.0 mm

FLANGE	LENGTH	PART NUMBER	£
19mm ø		271-CB-35K-16	252.00
16CF	117	271-CB-35K-16-C16	356.00
16KF	117	271-CB-35K-16-K16	356.00

35KV Vacuum breaks
60 mm long fluted ceramic

FLANGE	LENGTH	PART NUMBER	£
101mm ø	118	271-CB-35K-85	782.00
100CF	135	271-CB-35K-85-C100	1,173.00

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-50-20



273-CSO-10-10

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	£
7KV	10 X 10	273-CSO-10-10	35.00
10KV	12.7 X 10	273-CSO-13-10	35.00
12KV	16 X 12.7	273-CSO-16-30	35.00
35KV	51 X 13	273-CSO-51-13	35.00
35KV	51 X 19	273-CSO-51-20	35.00

Tube Feedthroughs

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



272-TU6SS5K welding Version

Specification Tube Feedthroughs

Tube	6.35 mm OD SS tube
Leak rate	<5x10 ⁻¹⁰ mbar l/s
Test-Voltage	5KV DC
Current	depends on water flow

5kV Tube feedthroughs 1/4" (6.35mm) OD Stainless Steel Tubes

FLANGE	No. OF TUBES	PART NUMBER	£
16CF	1	272-TU6SS5K-C16	91.00
40CF	2	272-TU6SS5K-2-C40	171.00
40CF	3	272-TU6SS5K-3-C40	240.00
40CF	4	272-TU6SS5K-4-C40	293.00

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

TUBE Ø	LENGTH	VOLTAGE	PART NUMBER	£
12.9	39.4	10KV	271-CB10K-8	310.00
30.5	65.5	20KV	271-CB20K-23	353.00
60.3	85.3	30KV	271-CB30K-51	417.00
71.1	110.7	40KV	271-CB40K-61	460.00

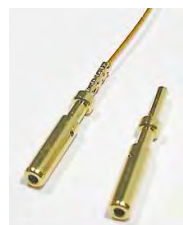
10KV to 40KV Vacuum Breaks Straight Ceramic, with CF Flanges

FLANGE	LENGTH	VOLTAGE	PART NUMBER	£
16CF	46.7	10KV	271-CB10K-8-C16	427.00
40CF	76.2	20KV	271-CB20K-23-C40	513.00
63CF	101.6	30KV	271-CB30K-51-C63	737.00
100CF	122.0	40KV	271-CB40K-61-C100	887.00

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	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	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
1.5	16.0	3.7	Au plated Cu



Wire ØMax	Be Cu 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	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	Diam.	Material
1.5	12.7	4.8	BeCu
1.8	12.7	4.8	BeCu
3.8	14.2	6.3	BeCu
3.4	16.0	6.3	BeCu
6.6	25.4	12.7	BeCu



Wire ØMax	Material
-	Cu
-	Cu

Crimps Female fit to Feedthrough Pins
Gold Plated Copper alloy

PIN SIZE	No PER PKT.	PART NUMBER	£
0.5 mm	10	360-CRF-05-10	39.00
0.7 - 0.8 mm	10	360-CRF-07-10	39.00
1.0 mm	10	212-PINF-10	11.50
1.0 mm	25	212-PINF-25	23.50
1.3 - 1.5 mm	5	360-CRIMP-1.3	37.50
2.3 - 2.4 mm	5	360-CRIMP-2.4	38.00

Male Crimps to fit Female Crimps
Gold Plated Copper alloy

PIN SIZE	QTY	PART NUMBER	£
0.7 - 0.8mm	10	360-CRM-07-10	16.00
1.0mm	10	212-PINM-10	7.00
1.0mm	25	212-PINM-25	15.00
1.3 - 1.5mm	5	360-CRIMP-1.3-M	33.00

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

SIZE	No PER PKT.	PART NUMBER	£
0.8 mm	10	360-CRBC-0.8	55.00
1.3 mm	10	360-CRBC-1.3	35.00
1.6 mm	10	360-CRBC-1.6	35.00

Power Push-ons with Allen Screw
Beryllium Copper

PIN SIZE	No PER PKT.	PART NUMBER	£
1.0 mm	10	360-PPO-1.0	64.00
1.3 mm	10	360-PPO-1.3	43.50
1.5 mm	10	360-PPO-1.5	43.50
2.4 mm	10	360-PPO-2.4	43.50
6.4 mm	2	360-PPO-6.4	51.00

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

PIN SIZE	No PER PKT.	PART NUMBER	£
4.0 mm	5	360-PPO-4.0	41.00

Power In-line Screw-on Sockets
Beryllium Copper

MAX PIN SIZE	No PER PKT.	PART NUMBER	£
1.5 mm	10	360-PIC-1.5	45.00
1.8 mm	10	360-PIC-1.8	45.00
3.0 mm	10	360-PIC-3.0	45.00
3.4 mm	10	360-PIC-3.4	71.00
6.6 mm	10	360-PIC-6.6	85.00

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

PIN SIZE	No PER PKT.	PART NUMBER	£
2.0 - 9.6 mm	1	360-CLAMP-9.6	POR
19 mm	1	360-CLAMP-19	POR



Thermocouple Feedthroughs, High Current, Combinations, Sockets and Wires



5.1 THERMOCOUPLE F/T TYPES K, N, C AND WIRES -> Page 54 - 55

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 56

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 57 - 58

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



5.4 THERMOCOUPLE F/T WITH MS CIRCULAR SOCKETS

-> Page 59

Thermocouple Feedthrough with MS Air Side Sockets

5.5 T/C Air Side Crimps

-> Page 60

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

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 longer 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 longer than (-)pole
Leak rate	<5 x 10 ⁻¹⁰ 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



262-TCC-1-C16

Pin Identification

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

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

FLANGE	No OF PAIRS	PART NUMBER	£
16CF	1	262-TCK-1-C16	94.00
16CF	2	262-TCK-2-C16	144.00
16CF	3	262-TCK-3-C16	216.00
40CF	4	262-TCK-4-C40	337.00
40CF	5	262-TCK-5-C40	396.00
16KF	1	262-TCK-1-K16	94.00
16KF	2	262-TCK-2-K16	144.00
16KF	3	262-TCK-3-K16	216.00
40KF	4	262-TCK-4-K40	338.00
40KF	5	262-TCK-5-K40	396.00

Also available as weldables

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

FLANGE	No OF PAIRS	PART NUMBER	£
16CF	1	262-TCC-1-C16	94.00
16CF	2	262-TCC-2-C16	144.00
16CF	3	262-TCC-3-C16	216.00
40CF	4	262-TCC-4-C40	337.00
40CF	5	262-TCC-5-C40	396.00
16KF	1	262-TCC-1-K16	94.00
16KF	2	262-TCC-2-K16	144.00
16KF	3	262-TCC-3-K16	216.00
40KF	4	262-TCC-4-K40	338.00
40KF	5	262-TCC-5-K40	396.00

Also available as weldables

Thermocouple Feedthroughs TYPE N 1 to 5 pairs including screw connectors

FLANGE	No OF PAIRS	PART NUMBER	£
16CF	1	262-TCN-1-C16	94.00
16CF	2	262-TCN-2-C16	144.00
16CF	3	262-TCN-3-C16	216.00
40CF	4	262-TCN-4-C40	337.00
40CF	5	262-TCN-5-C40	396.00
16KF	1	262-TCN-1-K16	94.00
16KF	2	262-TCN-2-K16	144.00
16KF	3	262-TCN-3-K16	216.00
40KF	4	262-TCN-4-K40	338.00
40KF	5	262-TCN-5-K40	396.00

Also available as weldables

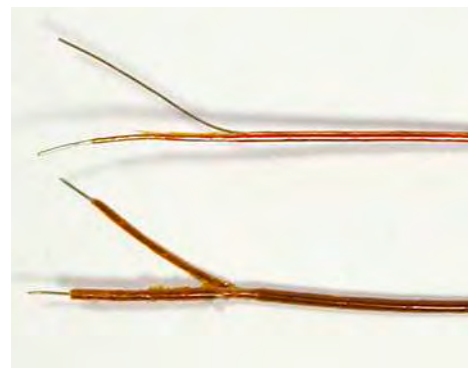
Thermocouple Wires Type K / N / C

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

Kapton Isolated Thermocouple wires – NO JUNCTION Types K & N

T/C TYPE	LENGTH	PART NUMBER	£
K	1 m	312-KAP-TCK	30.00
K	5 m	312-KAP-TCK-5M	112.00
K	10 m	312-KAP-TCK-10M	226.00
N	1 m	312-KAP-TCN	30.00
N	5 m	312-KAP-TCN-5M	112.00
N	10 m	312-KAP-TCN-10M	226.00

Note: Wires with junction made available on request

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

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

T/C TYPE	LENGTH	PART NUMBER	£
K	1 m	311-KAP-TCK	40.00
K	5 m	311-KAP-TCK-5M	135.00
K	10 m	311-KAP-TCK-10M	252.00

Note: Wires with junction made available on request

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

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

T/C TYPE	LENGTH	PART NUMBER	£
K	1 m	313-TCK-025	11.50
C	30 cm	313-TCC-013*	POR
N	1 m	313-TCN-025	12.00

Note: Wires with junction made available on request

* Wire diameter 0.13 mm, 0.25mm 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

PTFE Isolated Thermocouple wires – NO JUNCTION Type K

T/C TYPE	LENGTH	PART NUMBER	£
K	1 m	312-PTFE-TCK	23.00
K	5 m	312-PTFE-TCK-5M	90.00
K	10 m	312-PTFE-TCK-10M	181.00

Type K Kapton Isolated Thermocouple wires with welded tip junction

TIP INSULATED	LENGTH	PART NUMBER	£
no	1 m	312-KAP-TCK-1-L	39.00
yes (PTFE)	1 m	312-KAP-TCK-1-X	43.00

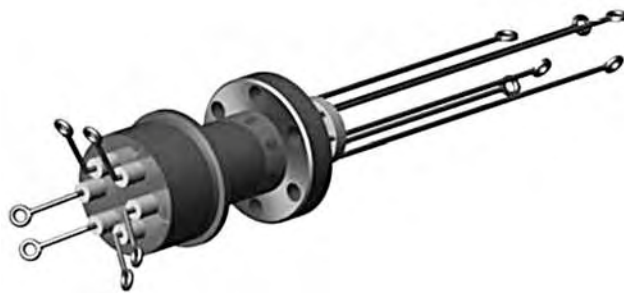
Note: Other lengths on request.

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 longer than -pole
Leak rate	< 5 x 10 ⁻¹⁰ mbar l/s
Temp.	-200°C to 450°C
Test-Resistivity	> 1 GΩ (pins to ground)
Air sockets	screw loops
Vac side	screw loops
Weld-ø	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 (long) R: Pt 13% Rh, S: Pt 10% Rh - pole (short) R and S: Pt (F/T uses extension grade material)
T Type	
Temp.	-200°C to 350°C
Pin length	+ pole (long) Cu - pole (short) Constantan

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

Vacuum	UHV
Material	Bare TC wire
Wire-ø	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

FLANGE	No OF PAIRS	PART NUMBER	£
16CF	1	262-TCR-1-C16	99.00
16CF	2	262-TCR-2-C16	153.00
16CF	3	262-TCR-3-C16	266.00
40CF	4	262-TCR-4-C40	430.00
40CF	5	262-TCR-5-C40	531.00
16KF	1	262-TCR-1-K16	99.00
16KF	2	262-TCR-2-K16	153.00
16KF	3	262-TCR-3-K16	266.00
40KF	4	262-TCR-4-K40	430.00
40KF	5	262-TCR-5-K40	531.00

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	£
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	£
K	0.25 mm	313-TCK-JOINT	11.00
C	0.25 mm	313-TCC-JOINT	POR
N	0.25 mm	313-TCN-JOINT	12.00

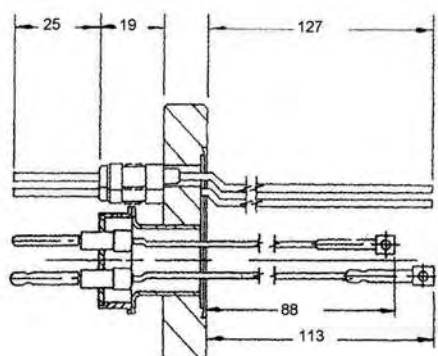
Combination Power/ Thermocouple Feedthroughs

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	<5x10 ⁻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 -

FLANGE	T/C TYPE	PART NUMBER	£
16CF	K	263-TCK-1-CU15-2-C16	184.00
16CF	C	263-TCC-1-CU15-2-C16	184.00
16KF	K	263-TCK-1-CU15-2-K16	189.00
16KF	C	263-TCC-1-CU15-2-K16	189.00

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

FLANGE	T/C TYPE	PART NUMBER	£
16CF	K	263-TCK-1-CU30-2-C16	207.00
16CF	C	263-TCC-1-CU30-2-C16	207.00
16KF	K	263-TCK-1-CU30-2-K16	207.00
16KF	C	263-TCC-1-CU30-2-K16	207.00

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

FLANGE	T/C TYPE	PART NUMBER	£
16CF	K	263-TCK-1-NI05-2-C16	180.00
16CF	C	263-TCC-1-NI05-2-C16	180.00
16KF	K	263-TCK-1-NI05-2-K16	184.00
16KF	C	263-TCC-1-NI05-2-K16	184.00

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

FLANGE	T/C TYPE	PART NUMBER	£
16CF	K	263-TCK-1-NI15-2-C16	202.00
16CF	C	263-TCC-1-NI15-2-C16	202.00
16KF	K	263-TCK-1-NI15-2-K16	202.00
16KF	C	263-TCC-1-NI15-2-K16	202.00

5.3 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.



Specification Combination High Current - T/C

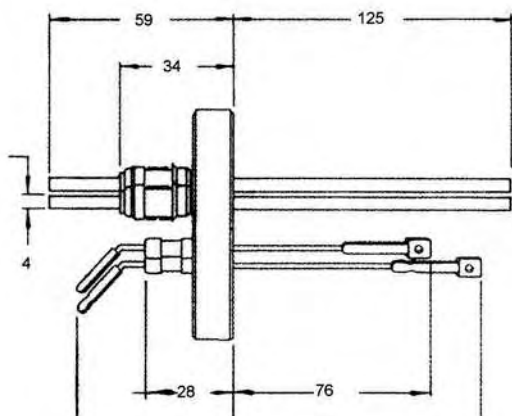
Vacuum	UHV
T/C type	K or C
Power pins	Copper
Pin-ø	30A pin 2.4 mm 60A pin 4.0 mm 150A pin 6.35 mm
Leak rate	<5 x 10 ⁻¹⁰ mbar l/s He
Temp.	-200°C to 450°C
Air sockets	T/C connectors included
Vac side	Screw & nut for T/C
Power pins	use 360-PPO-2.4 or 360-PPO-4 or 360-PIC-6.6

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

MAX AMPS	T/C TYPE	PART NUMBER	£
3 x 60A	K	263-TCK-1-CU60-3-C40	364.00
3 x 60A	C	263-TCC-1-CU60-3-C40	364.00
2 x 150A	K	263-TCK-1-CU150-2-C40	360.00
2 x 150A	C	263-TCC-1-CU150-2-C40	360.00



263-TCK-1-CU150-2-C40



263-TCK-1-CU60-2-C40

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

MAX AMPS	T/C TYPE	PART NUMBER	£
3 x 30A	2 x K	263-TCK-2-CU30-3-C40	382.00
3 x 30A	2 x C	263-TCC-2-CU30-3-C40	382.00
3 x 60A	2 x K	263-TCK-2-CU60-3-C40	400.00
3 x 60A	2 x C	263-TCC-2-CU60-3-C40	400.00
2 x 150A	2 x K	263-TCK-2-CU150-2-C40	396.00
2 x 150A	2 x C	263-TCC-2-CU150-2-C40	396.00



263-TCK-2-CU60-3-C40

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.

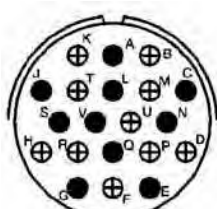
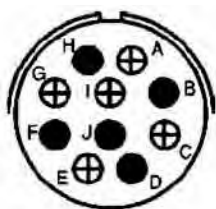
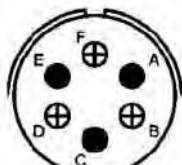
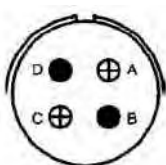
Double sided types with MS Sockets on the air and vacuum side are available to order.

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



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 F/T with MS Circular Air Side Sockets Type K

FLANGE	No OF PAIRS	PART NUMBER	£
16CF	2	263-TCK-MS-2-C16	252.00
16CF	3	263-TCK-MS-3-C16	279.00
16CF	5	263-TCK-MS-5-C16	333.00
40CF	2	263-TCK-MS-2-C40	265.00
40CF	3	263-TCK-MS-3-C40	283.00
40CF	5	263-TCK-MS-5-C40	340.00
40CF	10	263-TCK-MS-10-C40	625.00
16KF	2	263-TCK-MS-2-K16	247.00
16KF	3	263-TCK-MS-3-K16	265.00
16KF	5	263-TCK-MS-5-K16	324.00
40KF	2	263-TCK-MS-2-K40	261.00
40KF	3	263-TCK-MS-3-K40	279.00
40KF	5	263-TCK-MS-5-K40	342.00
40KF	10	263-TCK-MS-10-K40	607.00

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

Thermocouple Crimps for the Vacuum Side - see Page 60.



361-TCRIMP-CR

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 53.

Standard Thermocouple Sockets

T/C TYPE	MAX. TEMP.	PART NUMBER	£
K	125°C	361-TC-CON-K	7.00
C	125°C	361-TC-CON-C	7.00
N	125°C	361-TC-CON-N	7.00
J	125°C	361-TC-CON-J	7.00
E	125°C	361-TC-CON-E	7.00

Plugs are available on request.

High Temperature Sockets
650°C

T/C TYPE	MAX. TEMP	PART NUMBER	£
K	650°C	361-TC-CON-K-HT	23.00
C	650°C	361-TC-CON-C-HT	23.00
N	650°C	361-TC-CON-N-HT	23.00

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

T/C TYPE	MAX. TEMP	PART NUMBER	£
R/S/T	200°C	361-TC-SCREW	12.00

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.

Thermocouple Crimps

MATERIAL	No PER PKT.	PART NUMBER	£
Chromel	5	361-TCRIMP-AL	58.00
Alumel	5	361-TCRIMP-CR	58.00
Iron	5	361-TCRIMP-FE	68.00
Constantan-J	5	361-TCRIMP-CONJ	68.00
Constantan-E-T	5	361-TCRIMP-CONET	68.00
Nickel	5	361-TCRIMP-NI	42.00

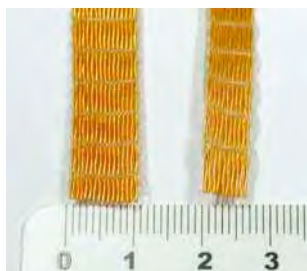
In Vacuum Wires, Cables, Connectors and Accessories



6.1 KAPTON WIRES FOR UHV

-> Page 62 - 63

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 64

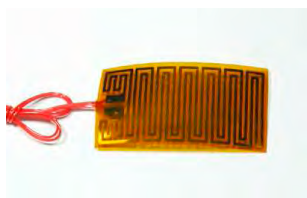
Twisted Pair with 1 and two pairs, shielded
Ribbon Cables with 4, 10, 15 strands



6.3 CRYOGENIC WIRES

-> Page 65

Special thin wires
Materials: Copper, Manganin and Konstantan



6.4 READY MADE VACUUM CABLES

-> Page 66 - 68

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 69 - 75

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 76 - 77

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



Overview table

Allectra 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	Ø Cond. mm	Ø max. mm	V max V DC	I max A	Cond. mm ²	R Ω/km	Application Examples
Plain Copper Wire, dipped							
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
Silver Plated Copper, wrapped							
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 instrumentation, 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
50 Ohm and other Coax-Wire, shielded Twisted Pair Wire							
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
Ribbon Cable							
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
Manganin Wire							
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

Silver Plated Specifications

Vacuum	UHV
Conductor	Copper, silver plated
Insulation	Wrapped Kapton®

Multistrand Specifications

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



311-KAPM-100

Ribbon cable specifications

Vacuum	UHV
Wire	311-KAPM-035
Binding	PEEK unfilled



311-KAP-PIB15
311-KAP-RIB10



Kapton Wires for UHV Single strand dipped types - Copper conductor

Ø	AWG	LENGTH	PART NUMBER	£
0.10 mm	38	5 m	311-KAP-010-5M	73.00
0.10 mm	38	10 m	311-KAP-010	130.00
0.12 mm	36	10 m	311-KAP-012	93.00
0.14 mm	35	10 m	311-KAP-014	93.00
0.25 mm	30	10 m	311-KAP-025	50.00
0.63 mm	22	10 m	311-KAP-060	55.00
1.00 mm	18	10 m	311-KAP-100	65.00
1.30 mm	16	5 m	311-KAP-130-5M	42.00
1.30 mm	16	10 m	311-KAP-130	75.00
1.70 mm	14	5 m	311-KAP-170-5M	76.00

Kapton Wires for UHV Silver Plated Copper Conductor

Ø	AWG	LENGTH	PART NUMBER	£
0.25 mm	30	10 m	311-KAP1	55.00
0.6 mm	22	10 m	311-KAP2	63.00

Kapton Wires for UHV Multi-strand High Flexibility types

Ø	AWG	LENGTH	PART NUMBER	£
0.25 mm	30	10 m	311-KAPM-025	60.00
0.35 mm	28	10 m	311-KAPM-035	65.00
0.60 mm	22	10 m	311-KAPM-060	75.00
0.75 mm	21	10 m	311-KAPM-075	85.00
1.00 mm	18	10 m	311-KAPM-100	88.00
2.20 mm	11	5 m	311-KAPM-200-5M	135.00

Kapton Ribbon Cable for UHV Silver plated Copper conductor

No. OF WIRES	LENGTH	PART NUMBER	£
4	1 m	311-KAP-RIB4-1000	37.00
10	1 m	311-KAP-RIB10-1000	58.00
15	1 m	311-KAP-RIB15-1000	85.00
25	1 m	311-KAP-RIB25-1000	115.00

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

Construction 311-KAPM025-SHIELD:

Conductor 0.25mm Ø (7x 0.08mm), Kapton insulation, Shield silver plated copper, blank

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

OD DIAMETER	LENGTH	PART NUMBER	£
1.4 mm	10 m	311-KAPM-060-COAX	96.00
0.9 mm*	10 m	311-KAPM-025-SHIELD	78.00

* 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**

IMPEDENCE	LENGTH	PART NUMBER	£
50	5 m	311-KAP50	115.00
50	1 m	311-KAP50-1	39.00

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

IMPEDENCE	LENGTH	PART NUMBER	£
50	5 m	311-KAP50S	120.00
50	1 m	311-KAP50S-1M	36.00



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	£
RG 316D	1 m	312-PTFE50-D	15.00
RG 178	1 m	312-PTFE50-S	10.00

* 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	

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

PAIRS	LENGTH	PART NUMBER	£
1	5 m	311-KAPM-060-PAIR1	91.00
2	5 m	311-KAPM-060-PAIR2	140.00

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 (0.12 mm) / 6KV (0.25 mm)
Resistivity	0.43 Ω mm ² / m
Conductance	22 W/ m K

KAPTON insulated Manganin Wire for cryogenic use

DIAMETER	LENGTH	PART NUMBER	£
0.14 mm	5 m	312-KAP-MAN-014-5M	82.00
0.14 mm	10 m	312-KAP-MAN-014-10M	126.00
0.25 mm	5 m	312-KAP-MAN-025-5M	92.00
0.25 mm	10 m	312-KAP-MAN-025-10M	140.00

Specification Constantan Wire

Vacuum:	UHV
Conductor:	Constantan®
Insulation:	PTFE
Voltage:	2KV
Resistivity	0.49 Ω mm ² / m
Conductance	23 W/ m K

PTFE insulated Constantan Wire for cryogenic use

DIAMETER	LENGTH	PART NUMBER	£
0.08 mm	10 m	312-PTFE-008-KON	73.00

Specification Braid

Vacuum	UHV
Material	Copper, Nickel plated

Braid Nickel plated Copper, per Meter

NOM. ID	RANGE	PART NUMBER	£
3.0 mm	2 - 6 mm	316-BRAID3	13.00
4.0 mm	3 - 8 mm	316-BRAID4	14.00



Braid, packed on a plastic tube for easy use

Specification PTFE RIBBON Cable

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

PTFE Ribbon Cable for UHV Silver plated Copper conductor

No. OF WIRES	LENGTH	PART NUMBER	£
10	1 m	312-PTFE-RIB10	21.00
15	1 m	312-PTFE-RIB15	29.00
25	1 m	312-PTFE-RIB25	41.00



Typical application of bare wire: Used together with ceramic tubes (see page 73), a compact heater can be made.

Specification Heater Wire

Vacuum	UHV
Wire	Tantalum/ Tungsten

Bare Wire for heaters Tantalum/ Tungsten, per Meter

DIAMETER	Material	PART NUMBER	£
0.25 mm	Tantalum	315-TA-025	41.00
0.2 mm	Tungsten	315-W-020	41.00

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

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

Sub-D KAPTON Ribbon Cable - 500 mm long
HV Socket to Open End

No. OF WIRES	LENGTH	PART NUMBER	£
9	500 mm	380-D09FXHR-500	124.00
15	500 mm	380-D15FXHR-500	154.00
25	500 mm	380-D25FXHR-500	199.00
37	500 mm	380-D37FXHR-500	299.00
50	500 mm	380-D50FXHR-500	363.00

Sub-D PTFE Ribbon Cable - 500 mm long
HV Socket to Open End

No. OF WIRES	LENGTH	PART NUMBER	£
9	500 mm	380-D09FXHPT-500	85.00
15	500 mm	380-D15FXHPT-500	93.00
25	500 mm	380-D25FXHPT-500	112.00

Sub-D KAPTON Ribbon Cable - 500 mm long
PEEK UHV Socket to Open End

No. OF WIRES	LENGTH	PART NUMBER	£
9	500 mm	380-D09FXPR-500	194.00
15	500 mm	380-D15FXPR-500	245.00
25	500 mm	380-D25FXPR-500	291.00
37	500 mm	380-D37FXPR-500	410.00
50	500 mm	380-D50FXPR-500	477.00

Sub-D KAPTON Ribbon Cable - 500 mm long
CERAMIC UHV Socket to Open End

No. OF WIRES	LENGTH	PART NUMBER	£
9	500 mm	380-D09FXUR-500	229.00
15	500 mm	380-D15FXUR-500	285.00
25	500 mm	380-D25FXUR-500	345.00
37	500 mm	380-D37FXUR-500	459.00
50	500 mm	380-D50FXUR-500	543.00

Sub-D KAPTON Ribbon Cable - Extension lengths
All Ribbon cables

No. OF WIRES	LENGTH	PART NUMBER	£
9	+500 mm	380-EXT09	32.00
15	+500 mm	380-EXT-15	47.00
25	+500 mm	380-EXT-25	67.00
37	+500 mm	380-EXT-37	117.00
50	+500 mm	380-EXT-50	137.00



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)

SMA 50 OHM Cables 500 mm long MALE plug to open end/ SMA male/ SMA female

TYPE1	TYPE2	PART NUMBER	£
SMA	OPEN	380-SMA-MX-500	87.00
SMA	SMA	380-SMA-MM-500	141.00
SMA	SMA female	380-SMA-MF-500	147.00

Specification BNC Cable

Vacuum	UHV
Type	Male/ Open
Test voltage	500V DC
Insulation test	>1 GOhm (core to shield)

BNC 50 OHM Cables, 500 mm long BNC to open end/ BNC

TYPE1	TYPE2	PART NUMBER	£
BNC	OPEN	380-BNC-MX-500	87.00
BNC	BNC	380-BNC-MM-500	138.00



380-BNC-MX-500

SMA/ BNC 50 OHM Cables Extended length per 500 mm

TYPE	LENGTH	PART NUMBER	£
SMA	per 0.5 m	380-SMA-EXT05	20.00
BNC	per 0.5 m	380-BNC-EXT05	20.00

SMA/ BNC 50 OHM Cables - Additional cost up to 1.0 m Double shielded TRIAX cables - horseshoe contact option

TYPE	LENGTH	PART NUMBER	£
No contact	to 1m	360-DS	41.00
Contact	to 1m	360-DS-C	51.00



Female SMA connector on the cable 380-SMA-MF-500

380-SMA-MM-500 cable with double shield option and contact 360-DS-C

The standard horseshoe used is for an M3 screw.



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	£
SHV	500 mm	380-SHV-MX-500	118.00
SHV	1000 mm	380-SHV-MX-1000	138.00

Kapton Coaxial MHV Cable - 50 Ohm type
MHV to open end

TYPE	LENGTH	PART NUMBER	£
MHV	500 mm	380-MHV-MX-500	87.00
MHV	1000 mm	380-MHV-MX-1000	110.00

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	£
MIC	open	380-MIC-MX-500	136.00
MIC	MIC	380-MIC-MM-500	240.00
MIC	SMA	380-MIC-SMA-500	190.00
MIC	BNC	380-MIC-BNC-500	190.00

Coaxial Kapton Cables
General purpose type fits 241-BNC and 241-MHV types

TYPE	LENGTH	PART NUMBER	£
Coaxial	0.5 m	380-IVCX-500	182.00
Coaxial	0.5 m	380-IVCL-500	182.00

Impedance of these connectors not constant

Self assembly In-Vacuum Cable Connectors
fit to 311-KAP50 cable

TYPE	No PER PKT.	PART NUMBER	£
BNC	1	245-CON-BNC	38.00
MHV	1	245-CON-MHV	66.00
SHV	1	245-CON-SHV	70.00
N	1	245-CON-N	58.00
Microdot	1	245-CON-MIC	88.00

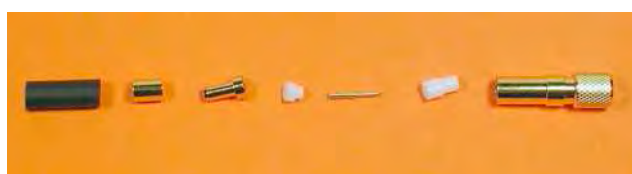


Cables with SHV (left) and MHV (right) UHV connectors. SHV, MHV and Microdot connectors use a Viton tube for cable clamping



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

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

Specification Power-Crimp

Max Current	3A (0.8mm) / 10A (1.3 + 1.6mm)
Temperature	300 °C
Material	Copper-Beryllium Gold plated
Reference	CRBC

Specification Push-on Socket

Max Current	25 A
Temperature	250 °C
Material	Copper-Beryllium Gold plated
Reference	PPO



360-CRIMP-1.3

360-CRIMP-1.3 on High Current Feedthrough



360-PPO-1.3



Screw-on Socket Beryllium Copper

MAX ID	No PER PKT.	PART NUMBER	£
1.5 mm	10	360-PIC-1.5	45.00
1.8 mm	10	360-PIC-1.8	45.00
3.0 mm	10	360-PIC-3.0	45.00
3.4 mm	10	360-PIC-3.4	71.00
6.6 mm	10	360-PIC-6.6	85.00

Power Crimps Beryllium Copper

MAX ID	No PER PKT.	PART NUMBER	£
0.8 mm	10	360-CRBC-0.8	55.00
1.3 mm	10	360-CRBC-1.3	35.00
1.6 mm	10	360-CRBC-1.6	35.00

Push-on Sockets Beryllium Copper

MAX ID	No PER PKT.	PART NUMBER	£
1.0 mm	10	360-PPO-1.0	45.00
1.3 mm	10	360-PPO-1.3	45.00
1.5 mm	10	360-PPO-1.5	45.00
2.4 mm	10	360-PPO-2.4	45.00
6.3 mm	2	360-PPO-6.3	51.00

Crimps Female to fit Feedthroughs Gold plated copper alloy

MAX ID	No PER PKT.	PART NUMBER	£
0.5 mm	10	360-CRF-05-10	39.00
0.75 mm	10	360-CRF-07-10	39.00
1.5 mm	5	360-CRIMP-1.3	37.50
2.4 mm	5	360-CRIMP-2.4	38.00

Crimps MALE to fit Female Crimps Gold plated copper alloy

MAX ID	No PER PKT.	PART NUMBER	£
0.75 mm	10	360-CRM-07-10	15.50
1.5 mm	5	360-CRIMP-1.3-M	33.00
2.4 mm	5	360-CRIMP-2.4-M	33.00

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	£
1.5 mm	M3	5*	360-RING-1.5-M3-NI	22.00
1.5 mm	M4	5*	360-RING-1.5-M4-NI	26.00
1.0 mm	M2	10	360-RING-1.0-M2	16.00
1.0 mm	M3	10	360-RING-1.0-M3	16.00
1.7 mm	M2	10	360-RING-1.7-M2	16.00
1.7 mm	M3	10	360-RING-1.7-M3	16.00
2.4 mm	M3	10	360-RING-2.4-M3	16.00
1.0 mm	M3	10	360-LUG-1.0	16.00
1.7 mm	M3	10	360-LUG-1.7	15.00
2.5 mm	M5	5	360-LUG-2.5	10.50

*) 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

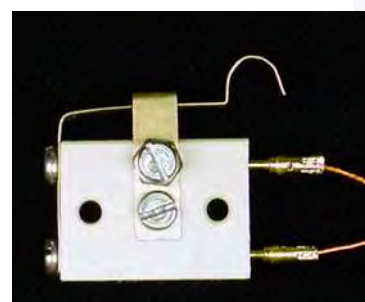
PINS	CONTACTS	PART NUMBER	£
4	2 X 2	360-SC2X2-1.8	84.00
4	1 X 4	360-SC1X4-1.8	66.00
6	1 X 6	360-SC1X6-1.8	91.00
8	1 X 8	360-SC1X8-1.8	121.00

In-Vacuum Cable Connectors PEEK set of Plug and Socket

TYPE	FITS	PART NUMBER	£
HC	KAPM-200	360-CON-HC	54.00
Co-axial	KAP50	360-CON-COAX	59.00

UHV Limit Switch Normally Closed Gold Plated Contacts

SIZE	No PER PKT.	PART NUMBER	£
25x17x8	1	363-SWITCH-2	156.00
25x23x8	1	363-SWITCH-3	156.00



360-SWITCH-3

UHV Lubricants, Glue and Kapton Solvent

Here you can find a Selection of In-Vacuum Accessories:

- UHV Lubricant
- UHV Leak Sealant
- UHV Glue
- Kapton removal paste

Specification UHV Lubricant

Temperature	-50°C to 200 °C
Vapour pressure at	
20°C	$\sim 5 \times 10^{-13}$ mbar
100°C	$\sim 1 \times 10^{-10}$ mbar
125°C	$\sim 1 \times 10^{-9}$ mbar
150°C	$\sim 1 \times 10^{-8}$ mbar

Specification UHV Dry Lubricant

Quality	highly pure MoS ₂
Temperature	in-vacuum 1100°C air-side up to 450°C

Specification Vacseal

Operational Area	Leak-proof medium for small leaks
Size	Container with brush, 14ml
Vacuum	UHV

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

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.

UHV Lubricant suitable for use from -50°C to 200°C

SIZE	PART NUMBER	£
10g	330-MCOTE-296	111.00



UHV Dry Lubricant MoS₂

SIZE	MAX.TEMP	PART NUMBER	£
10g	1100°C (Vac)	330-MOS2-10G	9.50

Leak Sealant VACSEAL

SIZE	PART NUMBER	£
14ml	330-VACSEAL-S	60.00

UHV Glue 2 component solvent free

TYPE	QTY	PART NUMBER	£
UHV	30g	330-GLUE1	95.00
UHV	30g	330-GLUE2	162.00
UHV	25g	330-GLUE3	241.00



330-GLUE1 (2 x 15 g)

KAPEX Kapton Solvent Paste

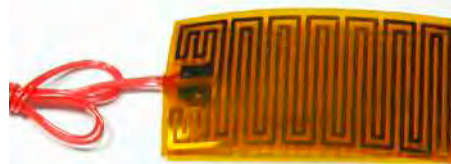
SIZE	PART NUMBER	£
15g	315-KAPEX-S	45.00
30g	315-KAPEX-M	65.00

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 ⁻⁹ mbar
Temperature	-200°C to 200°C



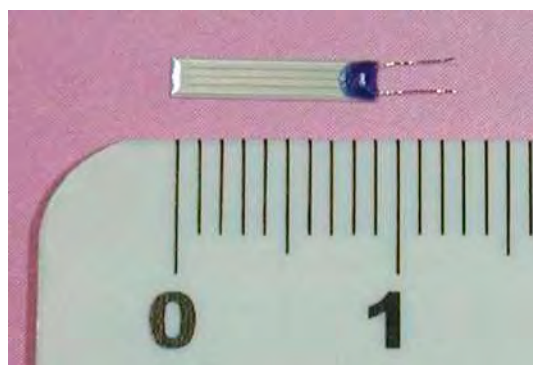
316-TIE-150



316-CBEAD-1.5

Specification Miniature Heater

Temperature	-40°C ... 500°C
Material	Al ₂ O ₃ , 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



343-HEATER-2x10

Kapton Heater Foils - Circular or square Cable length 300 mm - PTFE wires

POWER	SIZE	PART NUMBER	£
8W/26Ω	12.7 ø	317-KAPH-0.5	70.00
42W/78Ω	25 x 25	317-KAPH-1/1	76.00
91W/39Ω	25 x 50	317-KAPH1/2	80.00
110W/185Ω	50 x 50	317-KAPH-2/2	91.00
490W/43Ω	102 x 102	317-KAPH-4/4	161.00

Kapton Heater Foils - Cable length 500 mm Circular or Square with Kapton wires (311-KAPM-035)

POWER	SIZE	PART NUMBER	£
11W/15Ω	15 x 48	317-KAPH-15x48	71.00
29W/40Ω	15 x 56	317-KAPH-15x56	74.00
45W/60Ω	15 x 76	317-KAPH-15x76	77.00
60W/80Ω	25 x 56	317-KAPH-25x56	80.00
95W/120Ω	25 x 76	317-KAPH-25x76	85.00
95W/120Ω	38 x 56	317-KAPH-38x56	85.00
145W/180Ω	38 x 76	317-KAPH-38x76	91.00
125W/160Ω	46 x 56	317-KAPH-46x56	89.00
190W/240Ω	46 x 76	317-KAPH-46x76	100.00
185W/240Ω	66 x 56	317-KAPH-66x56	100.00
285W/360Ω	66 x 76	317-KAPH-66x76	105.00
50W/75Ω	38 ø	317-KAPH-38	78.00
230W/275Ω	66 ø	317-KAPH-66	111.00

Miniature Heater UHV

POWER	SIZE	PART NUMBER	£
27W	9.5 x 2.0	343-HEATER-2x10	48.00

Ceramic Beads Pack for 250 mm Wire length

ID	OD	PART NUMBER	£
1.5 mm	4 mm	316-CBEAD-1.5	22.00
2.5 mm	5 mm	316-CBEAD-2.5	23.00
2.7 mm	6 mm	316-CBEAD-2.7	24.00

SS Cable Ties 316 SS, Pack of 5

LENGTH	MAX ø	PART NUMBER	£
150 mm	40 mm	316-TIE150	11.30
200 mm	55 mm	316-TIE200	13.00
360 mm	105 mm	316-TIE360	18.30

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

Specification UHV Solder

Melting Point

Solder 300°C

LF Solder 225°C

Vapour pressure <1.5 10⁻¹¹ mbar at 250°C

315-Solder contains Lead



315-LF-SOLDER
It includes flux

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	£
LEADED	0.5 m	315-SOLDER	30.50
LEADED	1.0 m	315-SOLDER-1M	56.50

UHV Solder Lead Free type to 225°C

TYPE	LENGTH	PART NUMBER	£
NO LEAD	0.5 m	315-LF-SOLDER	28.00
NO LEAD	1.0 m	315-LF-SOLDER-1M	50.50

PEEK Raw Material Rods - 250 mm long Circular(C) or Rectangular(R) Section

SECTION	SIZE	PART NUMBER	£
C	Ø 6 mm	351-PEEK-6D	11.30
C	Ø 10 mm	351-PEEK-10D	24.50
C	Ø 16 mm	351-PEEK-16D	50.00
C	Ø 20 mm	351-PEEK-20D	61.00
R	6 x 15 mm	351-PEEK-6X15	47.00
R	10 x 14 mm	351-PEEK-10X14	68.00
R	10 x 50 mm	351-PEEK-10X50	113.00

Ceramic Tubes, 300mm Length

TYPE	OD / ID	PART NUMBER	£
1 hole	2.0 / 1.0	358-TUBE-20	13.00
2 holes	2.1 / 2 x 0.8	358-TUBE-21-2	27.00
4 holes	2.6 / 4 x 0.6	358-TUBE-26-4	31.50
	---	358-TUBE-CUT	3.50

Coloured Marker Beads 6 different colours, Pack of 300

ID	OD	PART NUMBER	£
1 mm	2 mm	316-COLBEADS	85.00

**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

UHV compatible Shrink Hose

TYPE	MAX ID	PART NUMBER	£
PTFE	2.0 mm	316-SHRINK-20	13.00
PTFE	3.2 mm	316-SHRINK-32	17.50
PTFE	6.3 mm	316-SHRINK-63	22.50
PTFE	9.5 mm	316-SHRINK-95	28.00
PTFE	14 mm	316-SHRINK-140	30.50

**Kapton® Tubes, 300 mm long
extruded**

TYPE	MAX ID	PART NUMBER	£
KAPTON	0.32 mm	312-KAP-TUBE-03-300	18.00
KAPTON	0.51 mm	312-KAP-TUBE-05-300	20.00
KAPTON	0.64 mm	312-KAP-TUBE-06-300	21.00
KAPTON	0.72 mm	312-KAP-TUBE-07-300	22.00
KAPTON	0.81 mm	312-KAP-TUBE-08-300	23.00
KAPTON	1.0 mm	312-KAP-TUBE-10-300	23.00
KAPTON	1.4 mm	312-KAP-TUBE-14-300	25.00

**PTFE Tubes
extruded, per Metre**

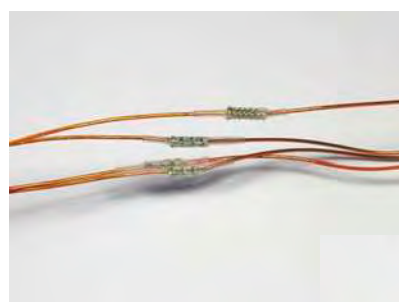
TYPE	ID/ OD	PART NUMBER	£
PTFE	2/4 mm	370-PTFE-TUBE2	14.00
PTFE	3/5 mm	370-PTFE-TUBE3	16.50
PTFE	4/6 mm	370-PTFE-TUBE4	22.00
PTFE	10/12 mm	370-PTFE-TUBE10	27.00
PTFE	12/14 mm	370-PTFE-TUBE12	31.50

**VITON® Tubes
extruded, per Metre**

TYPE	ID/ OD	PART NUMBER	£
VITON	1/3 mm	370-VIT-TUBE1	18.00
VITON	2/4 mm	370-VIT-TUBE2	20.00
VITON	3/5 mm	370-VIT-TUBE3	21.00
VITON	4/6 mm	370-VIT-TUBE4	25.00
VITON	5/7 mm	370-VIT-TUBE5	30.50
VITON	6/9 mm	370-VIT-TUBE6	36.50
VITON	10/13 mm	370-VIT-TUBE10	51.00

Specification KAPTON® Tubes

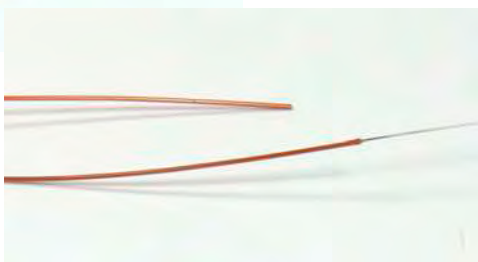
Temperature	-270 ... 260°C
Material	Kapton®, extruded quality
Thickness	0.3 ... 0.8mm: 25µm 1.0 ... 1.4mm: 50µm



316-SHRINK-Applications



312-KAP-TUBE

312-KAP-TUBE
with bare wire

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^{-10} mbar
Temperature	-200 °C ... 450°C
Accuracy	Class B ($0.3 + 0.005 \cdot T$)
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	£
NO WIRES	1.3 x 10	343-PT100-1.3-B	64.00
WIRES	1.3 x 10	343-PT100-1.3-B-1M	156.00



Specification for PT100 Ceramic Thermometer

Vacuum	UHV 10^{-10} mbar
Temperature	-70 °C ... 500°C
Accuracy	Class 1/3 B ($0.1 + 0.0017 \cdot T$)
Dimension	2.3mm x 2.1mm
Wire lengths	~10mm

Platinum Resistance Thermometers CERAMIC Plate with or without 4x1m KAPM-025 wires

TYPE	SIZE	PART NUMBER	£
NO WIRES	2.3 x 2.1	342-PT100-C2	28.00
WIRES	2.3 x 2.1	342-PT100-C2-1M	119.00

Specification for Kapton Foil

Vacuum	UHV
Temperature	-270 ... 260°C
Material	Kapton®
Size	~200 x 300mm sheet
Thickness	25µm / 50µm
Voltage rating	2KV / 4KV in vacuum

Kapton Foil 200 x 300 mm sheet

VOLTAGE	THICKNESS	PART NUMBER	£
7.5KV	25µ	312-KAPF-25-M	42.00
15KV	50µ	312-KAPF-50-M	62.00



Various sizes of crimp tubes. Use 214-CTOOL for crimping.

Crimp Tubes, Tin plated Copper 10 Pieces per pack

ID	OD / LENGTH	PART NUMBER	£
1,0mm	1,4 / 6 mm	360-CRTUBE10	2.60
1,2mm	1,6 / 6 mm	360-CRTUBE12	2.60
1,4mm	1,8 / 6 mm	360-CRTUBE14	2.60
1,7mm	2,0 / 7 mm	360-CRTUBE17	3.00
2,2mm	2,6 / 7 mm	360-CRTUBE22	3.50
2,8mm	3,2 / 9 mm	360-CRTUBE28	3.50
3,5mm	4,0 / 10 mm	360-CRTUBE35	4.00
4,5mm	5,0 / 12 mm	360-CRTUBE45	4.00
5,9mm	6,4 / 16 mm	360-CRTUBE59	5.30

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 *)	321-CTOOL-TP *)	321-CTOOL-SMA	321-CTOOL-SMA-BNC	321-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	£
214-CTOOL	172.00
214-CTOOL-SUB-D	85.00
214-CTOOL-HQ	422.00
214-CTOOL-TC	26.00
214-CTOOL-TC-HQ	208.00
321-CTOOL-TP	91.00
321-CTOOL-SMA	189.00
321-CTOOL-SMA-BNC	191.00
321-CTOOL-RING	189.00

Kapton Wire Strippers Precision Stripper

SIZE mm	SIZE AWG	PART NUMBER	£
0.12-0.4	36-26	321-STRIP04	51.50
0.3-1.0	28-18	321-STRIP10	51.50



321-STRIP-10

Pin demounting Tool for Sub-D ONLY FOR HV TYPES

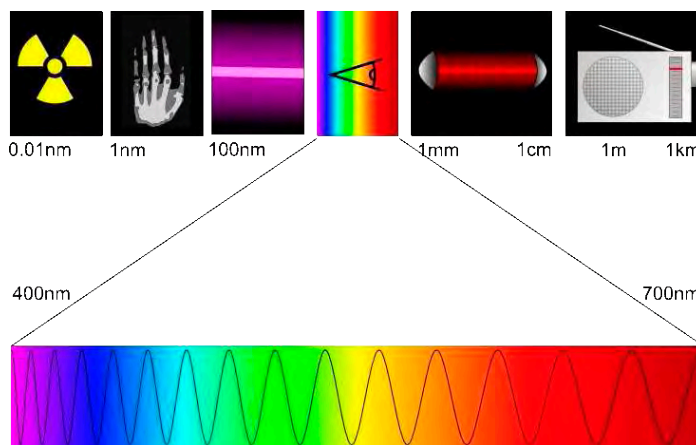
TYPE	No. PER PKT.	PART NUMBER	£
DEMOUNT	1	214-CRIMPINS	22.00



214-CRIMPINS with cable

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).

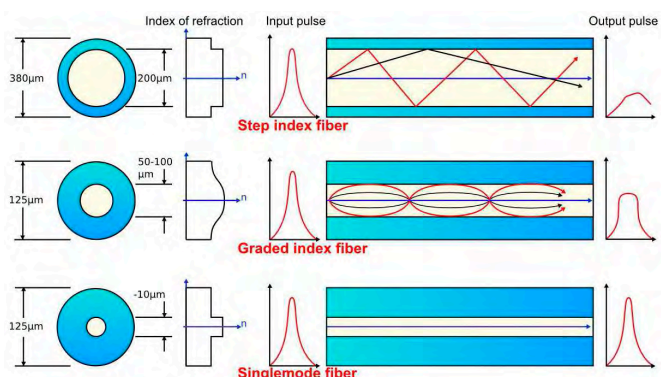
Polishing Quality

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 μm , 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 fibres are the Single Mode types. By having a very small diameter ($6-9\mu\text{m}$), 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.

Viewports and Fibre Optics for HV and UHV



7.1 STANDARD SERIES GLASS VIEWPORTS

-> Page 80

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 81

- 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 82 -83

Fused Silica Viewports UV grade
Fused Silica Viewports DUV grade
Fused Silica Viewports EXCIMER grade

7.4 BBAR COATED VIEWPORTS

-> Page 84

Broad Band Anti-Reflection coated Quartz
DUV Base material
40CF and 63CF sizes

7.5 LASER VIEWPORTS

-> Page 85

Laser Viewports with AR coating
40CF and 63CF sizes



7.6 NON-MAGNETIC AND CRYSTAL QUARTZ

-> Page 86

Non-magnetic Fused Silica Viewports
UV and DUV Quality
Crystal Quartz Viewports

7.7 SPECIAL MATERIALS VIEWPORTS

-> Page 87

Calcium-Fluoride/ Magnesium Fluoride/ Zinc Selenide
BBAR Coated Zinc Selenide

7.7 SPECIAL PURPOSE VIEWPORTS

-> Page 88

Re-Entrant Windows
Differentially pumped Geo-Chronology Zinc Selenide
X-Ray Beryllium Viewports



7.8 VIEWPORT ACCESSORIES

-> Page 89

Viewport Shutter
Lead Glass Radiation Protection Screen
External Viewport Door for Radiation Protection



7.9 FIBRE OPTICS (SUBSECTION)

-> Page 90 - 93

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.		



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.

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

Metal sealed Glass Viewports UHV

FLANGE	VIEW DIAM.	PART NUMBER	£
16CF	16	120-VPG-C16	68.00
40CF	38	120-VPG-C40	65.00
63CF	63	120-VPG-C63	95.00
100CF	90	120-VPG-C100	205.00
160CF	135	120-VPG-C160	320.00
200CF	135	120-VPG-C200	POR

Metal sealed Glass Viewports High Vacuum KF Types

FLANGE	VIEW DIAM.	PART NUMBER	£
16KF	16	120-VPG-K16	74.00
25KF	16	120-VPG-K25	75.00
40KF	32	120-VPG-K40	90.00
50KF	32	120-VPG-K50	103.00

O-Ring sealed Glass Viewports ISO-K Types

FLANGE	VIEW DIAM.	PART NUMBER	£
63 ISO	72	120-VPGO-ISO63	115.00
100 ISO	104	120-VPGO-ISO100	175.00
160 ISO	152	120-VPGO-ISO160	296.00
200 ISO	210	120-VPGO-ISO200	599.00

Standard Series Glass Viewports with Broad Band Anti-Reflective coating

FLANGE	VIEW DIAM.	PART NUMBER	£
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

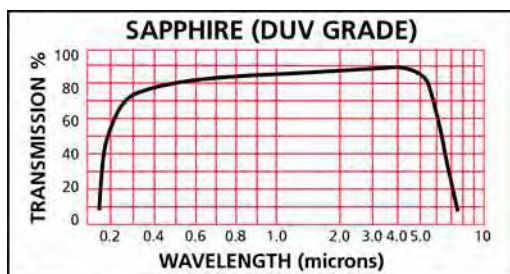
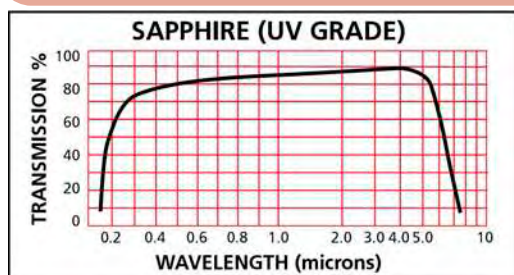
Parallelism	< 3 arc min
Surface finish	50-20 Scratch-Dig
Transmission	~ 180 – 5500nm >50% at 250nm

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

FLANGE	VIEW Ø	THICKN.	PART NUMBER	£
16CF	15	1.6	130-VPS-C16-15	180.00
40CF	24	2.0	130-VPS-C40-24	229.00
40CF	36	2.0	130-VPS-C40-36	540.00
63CF	49	2.4	130-VPS-C63-49	630.00

Note: also available on KF flanges or as weld adaptors

DUV GRADE Sapphire Viewports UHV - no coating

FLANGE	VIEW Ø	THICKN.	PART NUMBER	£
40CF	24	2.0	130-VPSPDUV-C40-24	265.00
40CF	36	2.0	130-VPSPDUV-C40-36	301.00
63CF	36	2.0	130-VPSPDUV-C63-36	729.00
63CF	49	2.4	130-VPSPDUV-C63-49	877.00

Note: also available as weld adaptors

Regular Grade Sapphire Viewports UHV - no coating

FLANGE	VIEW Ø	THICKN.	PART NUMBER	£
16CF	16	1.5	131-VPS-C16-16	316.00
40CF	32	1.5	131-VPS-C40-32	388.00
40CF	38	1.5	131-VPS-C40-40	504.00
63CF	63	2.0	131-VPS-C63-63	852.00
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	£
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

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 μ m
- DUV grade - 200nm to 2 μ m- high purity
- EXCIMER grade 185nm to 2.2 μ m



General Specification Fused Silica Viewports

Vacuum	UHV
Leak rate	<2x 10 ⁻¹⁰ 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% at 250nm
Usable range	200 ... 2000nm
Inclusions	max. 0.25mm ² /100cm ³ (class 2)
Isotropy	2D Material
Homogeneity	Grade F

Specification DUV Grade Fused Silica

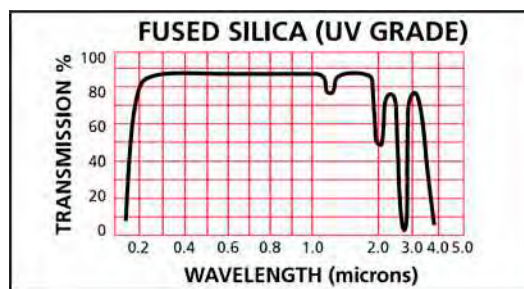
Parallelism	<10 arc sec
Surface Finish	20-10 scratch/dig
Flatness	$\lambda/4$ at 632nm
Transmission	>99,8% at 248nm (internal)
Usable range	200 ... 2000nm
Inclusions	max. 0.03mm ² /100cm ³ (class 0)
Isotropy	3D Material
Homogeneity	Grade A

Fused Silica (Quartz) Thickness:

16CF	2.5mm	40CF	3.3mm
63CF	6.4mm	100CF	6.4mm
160CF	9.4mm	200CF	6.4mm

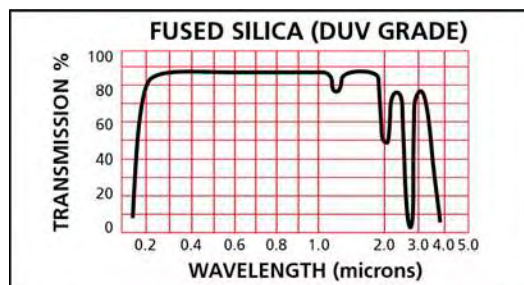
Fused Silica (Quartz) Viewports UV grade UHV 0.2 to 2 microns - NO coating

FLANGE	VIEW DIAM.	PART NUMBER	£
16CF	16	110-VPQZ-C16-UV	162.00
40CF	35	110-VPQZ-C40-UV	180.00
63CF	68	110-VPQZ-C63-UV	585.00
100CF	98	110-VPQZ-C100-UV	720.00
160CF	137	110-VPQZ-C160-UV	1755.00
200CF	198	110-VPQZ-C200-UV	2250.00



Fused Silica (Quartz) Viewports DUV grade UHV 0.2 to 2 microns - NO coating

FLANGE	VIEW DIAM.	PART NUMBER	£
16CF	16	110-VPQZ-C16-DUV	274.00
40CF	35	110-VPQZ-C40-DUV	315.00
63CF	68	110-VPQZ-C63-DUV	855.00
100CF	98	110-VPQZ-C100-DUV	1,215.00
160CF	137	110-VPQZ-C160-DUV	POR
200CF	198	110-VPQZ-C200-DUV	POR



Coated Quartz Viewports are available:
See pages 84 and 85 for details of broad band coatings and single line coatings for laser applications.

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.

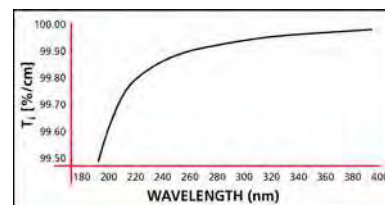
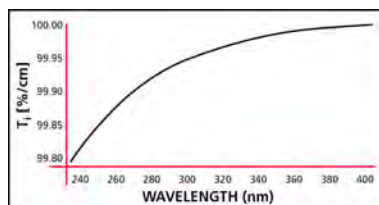
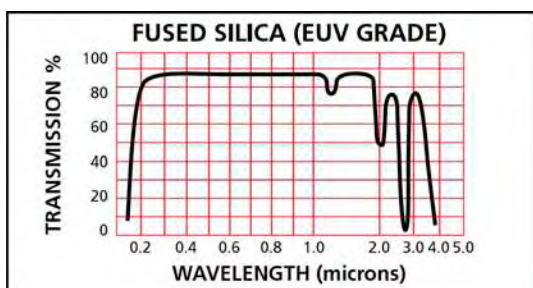


Specification EXCIMER (EUV) GRADE Fused Silica

Parallelism	<10 arc sec.
Surface Finish	20-10 scratch/dig
Flatness	$\lambda/4$ at 632nm
Transmission	>99,5% at 193nm (internal)
Usable range	180 ... 2000nm
Inclusions	max. 0.03mm ² /100cm ³ (class 0)
Isotropy	3D Material
Homogeneity	Grade A

Fused Silica Viewports - EXCIMER grade UHV 0.18 to 2 microns - NO coating

FLANGE	VIEW DIAM.	PART NUMBER	£
40CF	35	110-VPQZ-C40-EX	585.00
63CF	68	110-VPQZ-C63-EX	1,305.00



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 ⁻⁹ mbar
Temperature	-100 to 200°C <5K/min
Transmission	200 ... 20000nm
Inclusions	max 0.25mm ² /100cm ³
Isotropy	2D Material

Fused Silica Viewports Versions on KF Flanges

FLANGE	VIEW DIAM.	PART NUMBER	£
25KF	16	110-VPQZ-K25	184.00
40KF	35	110-VPQZ-K40	184.00
50KF	35	110-VPQZ-K50	225.00

Weldable versions are available as well in all three different qualities! Please ask for a quote

7.4 COATED QUARTZ VIEWPORTS

DE: Info@allectra.com
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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 ⁻¹⁰ 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 ² /100cm ³ (class 0)
Isotropy	3D Material
Homogeneity	Grade A

Fused Silica (Quartz) Viewports with BBAR coating UV Range 225 - 450nm

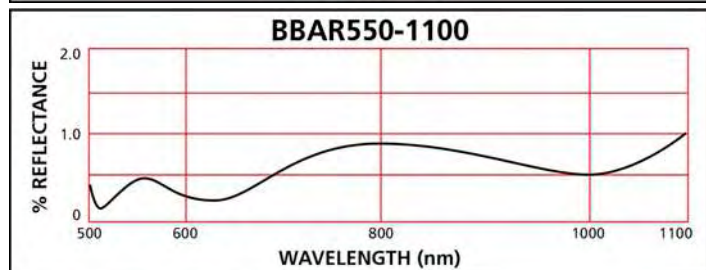
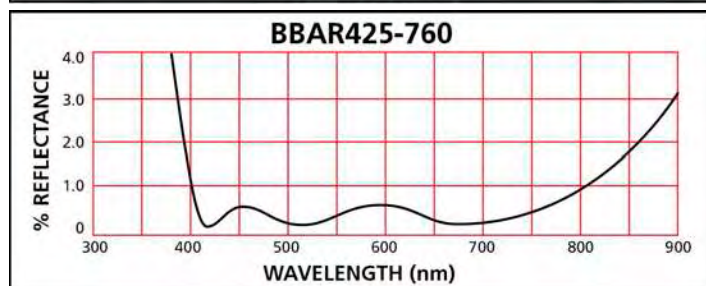
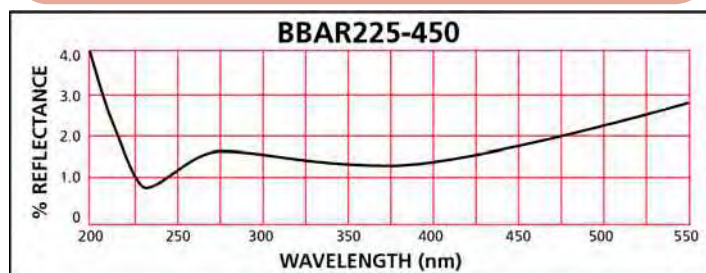
FLANGE	View ø	PART NUMBER	£
40CF	35 mm	110-QZ-UV-C40	625.00
63CF	68 mm	110-QZ-UV-C63	1,120.00

Fused Silica (Quartz) Viewports with BBAR coating Visible Range 425 - 760nm

FLANGE	View ø	PART NUMBER	£
40CF	35 mm	110-QZ-VIS-C40	625.00
63CF	68 mm	110-QZ-VIS-C63	1,120.00

Fused Silica (Quartz) Viewports with BBAR coating IR Range 550 - 1100 nm

FLANGE	View ø	PART NUMBER	£
40CF	35 mm	110-QZ-IR-C40	625.00
63CF	68 mm	110-QZ-IR-C63	1,120.00

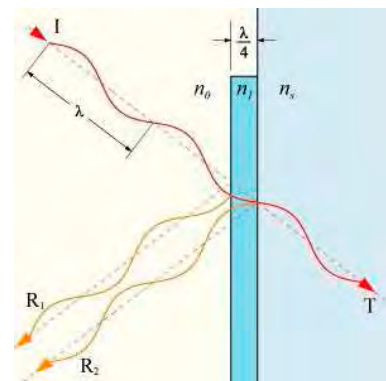


Reflectance versus wavelength for the 3 different types of standard broad band coating.

Top: UV-range
Middle: Visible range
Bottom: IR range

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.



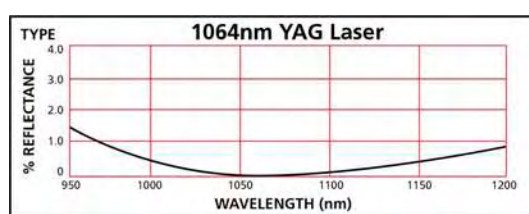
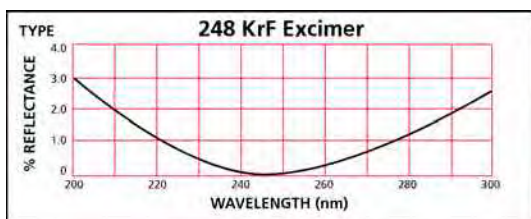
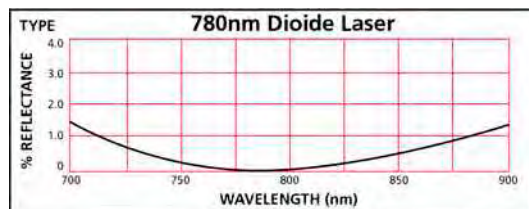
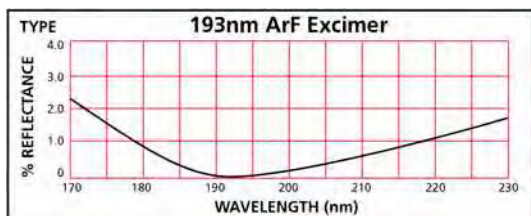
Specification for UHV Laser Viewports

Vacuum	UHV
Temperature	-100 to 200°C
Parallelism	<10 arc sec
Flatness	$\lambda/4$ at 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 ² for 10ns Pulse
KrF	10 J/cm ² for 10ns Pulse
Diode	10 J/cm ² for 10ns Pulse
YAG	10 J/cm ² for 10ns Pulse

Laser Viewports with AR coating 40CF and 63CF flanges

FLANGE	WAVELENGTH	PART NUMBER	£
40CF	193 nm	110-ARF-C40	715.00
63CF	193 nm	110-ARF-C63	1,210.00
40CF	248 nm	110-KRF-C40	625.00
63CF	248 nm	110-KRF-C63	1,120.00
40CF	780 nm	110-DIODE-C40	625.00
63CF	780 nm	110-DIODE-C63	1,120.00
40CF	1064 nm	110-YAG-C40	625.00
63CF	1064 nm	110-YAG-C63	1,120.00

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

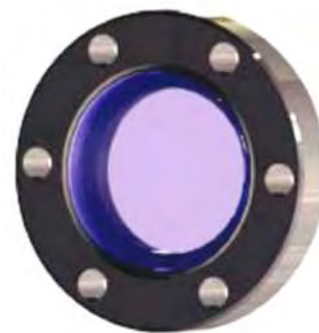
7.6 NON-MAGNETIC VIEWPORTS

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

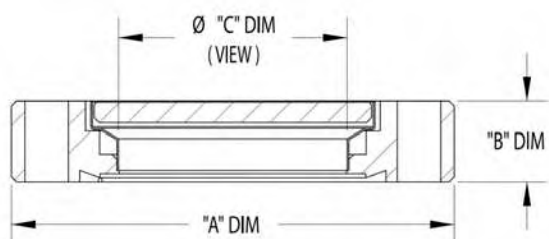


Specification Non-Magnetic Fused Silica

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 82	

Non-Magnetic Fused Silica Viewports UV and DUV Quality

FLANGE	TYPE	PART NUMBER	£
16CF	UV Grade	110-QZ-NM-C16-UV	432.00
40CF	UV Grade	110-QZ-NM-C40-UV	517.00
16CF	DUV Grade	110-QZ-NM-C16-DUV	531.00
40CF	DUV Grade	110-QZ-NM-C640-DUV	639.00

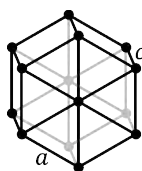


Viewport dimensions:

DN16CF: A= 34mm, B= 8.9mm, C= 16mm

DN40CF: A= 70mm, B=12.7mm, C= 35.5mm

Crystal Quartz Viewports



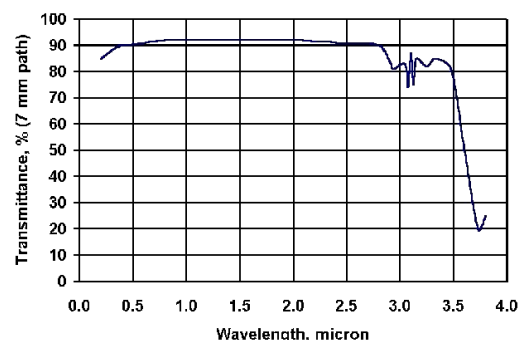
Optical Quality Crystalline Quartz features high transmittance in ultraviolet, visible and infrared spectrum from 190 to 2900 nm, birefringence, ability to rotate plane polarized light, high damage threshold and resistance to scratching. Optical quality material is virtually bubble and inclusion free, grade A.

Crystal Quartz Viewports UHV

FLANGE	VIEW $\varnothing$	PART NUMBER	£
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	$\lambda/2$ at 632nm

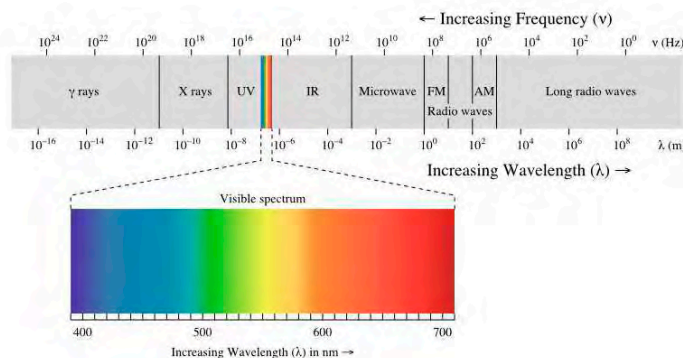


Transmission spectrum of Crystal Quartz

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 $20\mu\text{m}$ (see the transmission curves below).

With the optional AR coating higher transmission can be reached.



Specification Special Material Viewports

Vacuum	UHV, 10^{-10} mbar
Temperature	200°C (150°C for coated ZnSe)
Transmission:	
CaF ₂	150nm ... $9\mu\text{m}$
MgF ₂	180nm ... $8\mu\text{m}$
ZnSe	600nm ... $20\mu\text{m}$
View Diameters	40CF: 23mm 63CF: 48mm
Flatness:	$\lambda/4$
Surface finish	20/10 (CaF ₂ , MgF ₂) 40/20 (ZnSe)

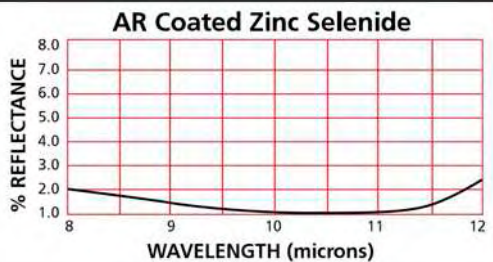
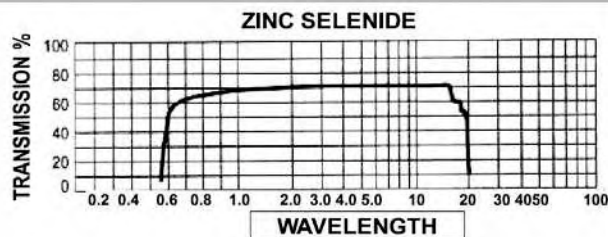
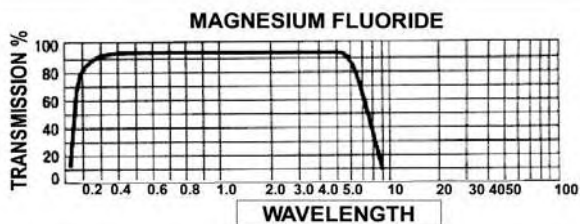
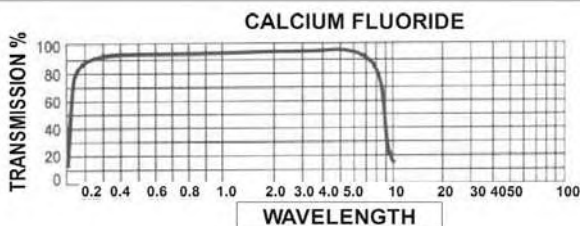
Special Materials Viewports - NO COATING UHV

FLANGE	TYPE	PART NUMBER	£
40CF	CaF ₂	130-CAF-23-C40	535.00
63CF	CaF ₂	130-CAF-48-C63	POR
40CF	MgF ₂	130-MGF-23-C40	535.00
63CF	MgF ₂	130-MGF-48-C63	POR
40CF	ZnSe	130-ZNSE-23-C40	535.00
63CF	ZnSe	130-ZNSE-48-C63	POR

Special Materials Viewports ZnSe - AR COATED UHV

FLANGE	TYPE	PART NUMBER	£
40CF	ZnSe	130-ZNSE-23-AR-C40	715.00
63CF	ZnSe	130-ZNSE-48-AR-C63	POR

The standard coating for ZnSe is a Broad Band AR (for 8 - $12\mu\text{m}$); the reflection loss is $<0.5\%$ per surface. Please note that coated viewports are bakeable to 150°C only.



7.7 SPECIAL PURPOSE VIEWPORTS

DE: Info@allectra.com
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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, $<10^{-10}$ 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

FLANGE	TYPE	PART NUMBER	£
63CF	UV	110-REQZ-C63-UV	630.00
100CF	UV	110-REQZ-C100-UV	1,035.00
63CF	DUV	110-REQZ-C63-DUV	765.00
100CF	DUV	110-REQZ-C100-DUV	1,305.00

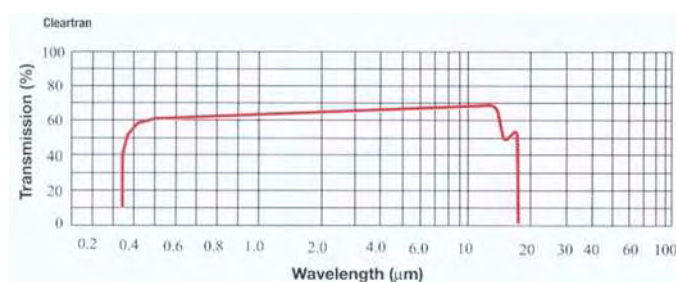
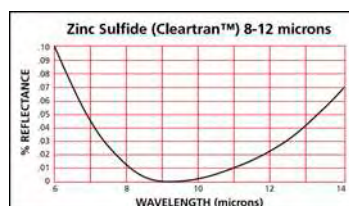
Special purpose Viewports: - Differentially pumped XHV

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

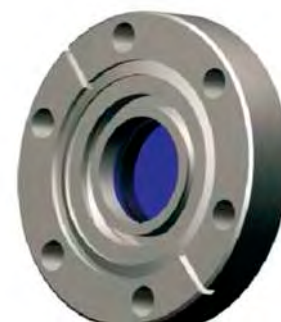
Vacuum	XHV, $<10^{-11}$ mbar (2 UHV sealed viewports, differentially pumped)	
Temperature	200°C	
Material	Cleartran® (Zinc Sulfide), AR coated 8 - 12µm	
Transmission	350nm - 15µm	
View Diameter	40CF: 23.6mm	63CF: 48mm
Flatness	$\lambda/4$	
Surface finish	40/20	



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 ⁻¹⁰ 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	£
63CF	MANUAL	140-VPSH-C63	730.00
100CF	MANUAL	140-VPSH-C100	813.00
160CF	MANUAL	140-VPSH-C160	1,101.00
63 ISO	MANUAL	140-VPSH-ISO63F	920.00
100 ISO	MANUAL	140-VPSH-ISO100F	1,022.00



140-VPSH-C100

Lead Glass Radiation Protection Screen ~1.5 mm lead equivalent

FLANGE	TYPE	PART NUMBER	£
16CF	KIT	140-LG-C16	80.00
40CF	KIT	140-LG-C40	169.00
63CF	KIT	140-LG-C63	296.00
100CF	KIT	140-LG-C100	POR
160CF	KIT	140-LG-C160	POR

External Viewport Door for Radiation Protection with microswitch for interlock circuit

FLANGE	TYPE	PART NUMBER	£
63CF	MANUAL	140-VPXD-C63	190.00
100CF	MANUAL	140-VPXD-C100	245.00
160CF	MANUAL	140-VPXD-C160	330.00

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.

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.

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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 $600\mu\text{m}$ core diameter are used; a UV and an IR version are available.

A disadvantage is that two Fibre junctions are required

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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 $400\mu\text{m}$ Step Index Multimode Fibres. UV and IR types are available.

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4) UHV Feedthrough with attached $125\mu\text{m}$ OD In-Vacuum Fibre and FC-PC connectors

With FC-PC connectors several types of Fibres can be offered:

- The typical $50\mu\text{m}$ core data fibre as a Multimode fibre
- Single mode fibre with $9\mu\text{m}$ core
- Single mode fibre with $6\mu\text{m}$ 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.

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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.



Specification Fibre Optic Coupler F/T

Vacuum	HV, down to 10 ⁻⁸ 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



Specification In-Vacuum Fibre for Coupler F/T

Vacuum	10 ⁻¹⁰ 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



In-vacuum cable: F-SMA connector with SS shielded fibre.

This Vacuum Side Plug is used to vacuum seal unused feedthroughs.

Fibre Optic Coupler Feedthroughs KF Flanges, O-Ring Sealed

FLANGE	No of F/T	PART NUMBER	£
16KF	1	152-FCF-K16	150.00
25KF	1	152-FCF-K25	150.00
40KF	1	152-FCF-K40	150.00
40KF	2	152-FCF-K40-2	238.00
40KF	3	152-FCF-K40-3	325.00
40KF	4	152-FCF-K40-4	412.00

Fibre Optic Coupler Feedthroughs CF Flanges, O-Ring Sealed

FLANGE	No of F/T	PART NUMBER	£
16CF	1	152-FCF-C16	160.00
40CF	1	152-FCF-C40	165.00
40CF	2	152-FCF-C40-2	250.00
40CF	3	152-FCF-C40-3	338.00
40CF	4	152-FCF-C40-4	434.00

In-Vacuum Multimode Fibres UHV Versions 400 micron

TYPE	LENGTH	PART NUMBER	£
UV, SMA-SMA	300	151-SMA400-UV-300	375.00
UV, SMA-SMA	600	151-SMA400-UV-600	393.00
UV, SMA-Ferrule	600	151-SMA400F-UV-600	389.00
IR, SMA-SMA	300	151-SMA400-IR-300	375.00
IR, SMA-SMA	600	151-SMA400-IR-600	393.00
IR, SMA-Ferrule	600	151-SMA400F-IR-600	389.00

Other lengths available on request

Replacement O-Rings

O-RING	No per PKT.	PART NUMBER	£
BUNA-N	10	152-FCF-OB-10	22.00
VITON	1	152-FCF-OV	25.00

Fibre Optic Coupler Feedthroughs Vacuum Side Plug

TYPE	No per PKT.	PART NUMBER	£
PLUG	1	152-FPLUG	32.00

UHV Fibre Optic All Metal Feedthroughs

Allectra offers Fibre Optic All Metal Feedthroughs:

- UHV Fibre Optic All-Metal feedthrough - 600 micron Multi-mode Fibre
- UHV Fibre Optic F-SMA Couplers - Air and Vacuum Service



Specification UHV Fibre Optic All-Metal F/T

Vacuum	UHV, <2x 10 ⁻¹⁰ mbar l/s
Temperature	200°C max. bakeout
Fibre	600µm Step index Multimode
Damping UV Type	<1.2db/m at 248nm
	<0.26db/m at 308nm
Damping IR Type	<0.01db/m at 1064nm

UHV Fibre Optic All-Metal feedthrough includes 600 micron Multimode Fibre

FLANGE	TYPE	PART NUMBER	£
16CF	UV	150-FFT-UV-C16	522.50
40CF	UV	150-FFT-UV-C40	534.00
40CF	UV x 2	150-FFT-UV-C40-2	785.00
16CF	IR	150-FFT-IR-C16	522.50
40CF	IR	150-FFT-IR-C40	534.00
40CF	IR x 2	150-FFT-IR-C40-2	785.00



Feedthrough with Vacuum Side Coupler



150-FFT-UV-C40

Specification for In-Vacuum Fibre (600µm) for All-metal Feedthrough

Vacuum	10 ⁻¹⁰ mbar
Fibre Type	Step Index Multimode 600µm
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 600µm

TYPE	LENGTH	PART NUMBER	£
UV, SMA-SMA	300	151-SMA600-UV-300	442.00
UV, SMA-SMA	600	151-SMA600-UV-600	471.00
UV, SMA-Ferrule	600	151-SMA600F-UV-600	471.00
IR, SMA-SMA	300	151-SMA600-IR-300	442.00
IR, SMA-SMA	600	151-SMA600-IR-600	471.00
IR, SMA-Ferrule	600	151-SMA600F-IR-600	471.00

Other lengths available on request

UHV Fibre Optic F-SMA Couplers Air and Vacuum Service

VACUUM	TYPE	PART NUMBER	£
UHV	F-SMA	151-FC-UHV	27.50
AIR	F-SMA	151-FC-AIR	15.00



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.

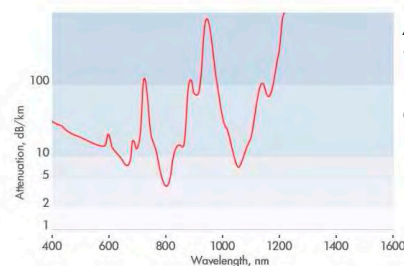


General Specification for Multi-mode Fibres

Vacuum	UHV, < 5x10 ⁻¹⁰ 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	£
16CF	1x UV	150-UV-S-S-1000-C16	540.00
40CF	1x UV	150-UV-S-S-1000-C40	543.00
40CF	2x UV	150-UV-S-S-1000-C40-2	1,060.00
40CF	3x UV	150-UV-S-S-1000-C40-3	1,534.00



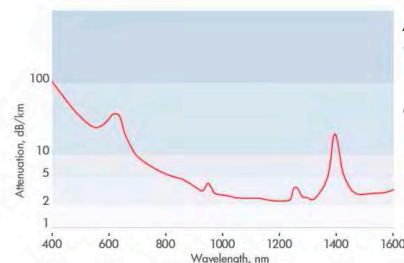
Attenuation versus wavelength for UV fibre. Values are given in dB/km

Specification for UV Fibre 400 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	£
16CF	1x IR	150-IR-S-S-1000-C16	540.00
40CF	1x IR	150-IR-S-S-1000-C40	543.00
40CF	2x IR	150-IR-S-S-1000-C40-2	1,060.00
40CF	3x IR	150-IR-S-S-1000-C40-3	1,534.00



Attenuation versus wavelength for IR fibre. Values are given in dB/km

Specification for IR Fibre 400 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

**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 they can be combined with ST Connectors by using a different coupler. 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.



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.

General Specification 125µm Fibre types

Vacuum	UHV, < 5x10 ⁻¹⁰ 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

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**

FLANGE	FIBRE	PART NUMBER	£
16CF	1x 125/50µm, 1000 mm	150-50-F-F-1000-C16	626.00
40CF	1x 125/50µm, 1000 mm	150-50-F-F-1000-C40	630.00
40CF	2x 125/50µm, 1000 mm	150-50-F-F-1000-C40-2	1,234.00
40CF	3x 125/50µm, 1000 mm	150-50-F-F-1000-C40-3	1,839.00

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**

FLANGE	FIBRE	PART NUMBER	£
16CF	1x 125/9µm, 1000 mm	150-09-F-F-1000-C16	635.00
40CF	1x 125/9µm, 1000 mm	150-09-F-F-1000-C40	639.00
40CF	2x 125/9µm, 1000 mm	150-09-F-F-1000-C40-2	1,252.00
40CF	3x 125/9µm, 1000 mm	150-09-F-F-1000-C40-3	1,865.00

Specification 125/6µm Single-Mode Fibre F/T

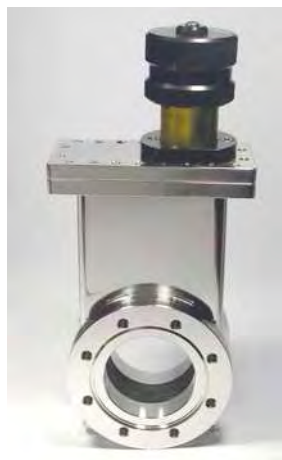
Fibre Type	Monomode, 6µm Core Ø, 125µm OD
Transmission	800 – 900 nm
Cut-Off	<770 nm
Num. Aperture	0.13
Damping	~0.0105 dB /m at 850nm

**UHV Fibre Optic All-Metal Feedthrough
6µm Core, 125µm OD, Single-Mode Fibre 1m long**

FLANGE	FIBRE	PART NUMBER	£
16CF	1x 125/6µm, 1000 mm	150-06-F-F-1000-C16	635.00
40CF	1x 125/6µm, 1000 mm	150-06-F-F-1000-C40	639.00
40CF	2x 125/6µm, 1000 mm	150-06-F-F-1000-C40-2	1,252.00
40CF	3x 125/6µm, 1000 mm	150-06-F-F-1000-C40-3	1,865.00

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

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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 98

UHV Right Angle Valves - Stainless Steel - Manual
UHV Right Angle Valves - Stainless Steel - Pneumatic
High Vacuum Right Angle Valves - Aluminium - Manual
High Vacuum Right Angle Valves - Aluminium - Pneumatic



8.3 ALL METAL VALVES

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UHV All metal Valves - Manual Right Angle
UHV Miniature Leak Valve
UHV Precision Leak Valve



UHV and High Vacuum Gate Valves - Manual

Pneumatic with Position Indicator

Allectra offers a range of high quality Stainless Steel Gate Valves suitable for HV and UHV applications

- Manual and Electro-pneumatic versions
- Edge Welded Bellows plate movement
- Viton plate seal
- Metal bonnet seal
- Position indicator as standard
- Full range of spares available



Specification Gate Valves - Manual

Sizes	DN40CF - DN250CF DN40KF - DN250ISO
Material	Stainless Steel
Max. Temperature	open 230°C closed 150°C
Bellows	Edge Welded
Finish	Electro-polish
Gasket Gate	Viton
Bonnet seal	Metal
Vacuum	<2*10 ⁻¹⁰ mbar l/s
Orientation	any

UHV and High Vacuum Gate Valves
MANUAL

FLANGE	THICKNESS	PART NUMBER	£
40CF	67,2	511-GV-C40	1,095.00
63CF	67,2	511-GV-C63	1,486.00
100CF	79,8	511-GV-C100	2,030.00
160CF	86,8	511-GV-C160	2,737.00
200CF	91,2	511-GV-C200	POR
250CF	105	511-GV-C250	POR
40KF	56,5	511-GV-K40	1,051.00
63-ISO	56,5	511-GV-ISO63	1,434.00
100-ISO	64,0	511-GV-ISO100	1,942.00
160-ISO	66,0	511-GV-ISO160	2,563.00
200-ISO	74,0	511-GV-ISO200	POR
250-ISO	80,0	511-GV-ISO250	POR

Specification Gate Valves - Pneumatic

Air Cylinder	Aluminium-cylinder
Air Pressure	4.8 - 6.9 bar adjustable closure speed
Solenoid	24V DC Standard
Position Indicator	Standard, 24V max. 40 mA

UHV and High Vacuum Gate Valves
PNEUMATIC WITH POSITION INDICATOR

FLANGE	THICKNESS	PART NUMBER	£
40CF	67,2	511-GV-C40-P	1,360.00
63CF	67,2	511-GV-C63-P	1,723.00
100CF	79,8	511-GV-C100-P	2,217.00
160CF	86,8	511-GV-C160-P	2,953.00
200CF	91,2	511-GV-C200-P	POR
250CF	105	511-GV-C250-P	POR
40KF	56,5	511-GV-K40-P	1,269.00
63-ISO	56,5	511-GV-ISO63-P	1,600.00
100-ISO	64,0	511-GV-ISO100-P	2,076.00
160-ISO	66,0	511-GV-ISO160-P	2,846.00
200-ISO	74,0	511-GV-ISO200-P	POR
250-ISO	80,0	511-GV-ISO250-P	POR



511-GV-CF63-P

For full dimensional information, please ask the Sales Office for the Gate Valve Data Sheet

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 both Viton and Metal Gaskets.
Spare Parts	A full range of Spare Parts including bellows and pneumatic cylinders are available on request.



Spare Gate Valve Gasket set

UHV and High Vacuum Gate Valves SPARE GASKET SETS (1Viton, 1 Metal)

FLANGE	GASKETS	PART NUMBER	£
40KF/CF	2	511-GVG40	23.00
63ISO/CF	2	511-GVG63	23.00
100ISO/CF	2	511-GVG100	37.00
160ISO/CF	2	511-GVG160	45.00
200ISO/CF	2	511-GVG200	59.00
250ISO/CF	2	511-GVG250	75.00

Specification for Rectangular Gate Valves

Vacuum	HV
Bakeout	150°C open and closed (Sensor 60°C max)
Air cylinder	Aluminium-cylinder
Air Pressure	4.8 – 6.9 bar
Solonoid	adjustable closure speed
Position Indicator	24V DC Standard
First service	Standard, 24V max. 40mA
	50.000 cycles or one year

Maximum Sample Diameter	
Flange	Max Diam.
50 x 250mm (2" x 10")	250mm
50 x 325mm (2" x 13")	352mm
50 x 350mm (2" x 14")	350mm

High Vacuum Rectangular Gate Valves PNEUMATIC WITH POSITION INDICATOR

FLANGE	THICKNESS	PART NUMBER	£
2" X 10"	55	511-RAGV-2X10	POR
2" X 13"	55	511-RAGV-2X13	POR
2" X 14"	55	511-RAGV-2X14	POR

For full dimensional information on the Rectangular Gate Valves, please ask Sales Office for the Data Sheet

Viton Sealed Right Angle Valves

Viton Sealed Right Angle Valves are suitable for use in High Vacuum systems and in less demanding positions in UHV systems. The seal is made with a Viton O ring which is best for valves that must be opened and closed frequently.

- Stainless Steel and Aluminium bodies
- Manual and Pneumatic versions
- CF and KF flanges



Specification Right Angle Valves - Stainless Steel Manual

Size	up to DN40CF and DN50KF Both CF flanges rotatable
Seal	Viton
Vacuum	<1x10 ⁻⁹ mbar l/s
Bake Temp.	to 150°C closed
Port Length	(symmetric) from port to centre axis
16CF/16KF	40 mm
25KF	50 mm
40CF	63 mm
40KF	65 mm
50KF	70 mm

UHV Right Angle Valves
Stainless Steel MANUAL

FLANGE	SEAL	PART NUMBER	£
16CF	VITON	511-AV-C16-V	328.00
40CF	VITON	511-AV-C40-V	442.00
63CF	VITON	511-AV-C63-V	899.00

High Vacuum Right Angle Valves
Aluminium - MANUAL

FLANGE	SEAL	PART NUMBER	£
16KF	VITON	511-AV-KF16-V-ALU	165.00
25KF	VITON	511-AV-KF25-V-ALU	200.00
40KF	VITON	511-AV-KF40-V-ALU	263.00
50KF	VITON	511-AV-KF50-V-ALU	418.00

Specification for Right Angle Valves - Pneumatic

Air Cylinder	Aluminium cylinder
Air Pressure	4.8 - 6.9 bar
Position	normally closed
Solenoid	24V DC Standard

UHV Right Angle Valves
Stainless Steel PNEUMATIC

FLANGE	SEAL	PART NUMBER	£
16CF	VITON	511-AVP-C16-V	431.00
40CF	VITON	511-AVP-C40-V	550.00
63CF	VITON	511-AVP-C63-V	1,018.00

High Vacuum Right Angle Valves
Aluminium - PNEUMATIC

FLANGE	SEAL	PART NUMBER	£
16KF	VITON	511-AVP-KF16-V-ALU	165.00
25KF	VITON	511-AVP-KF25-V-ALU	200.00
40KF	VITON	511-AVP-KF40-V-ALU	263.00
50KF	VITON	511-AVP-KF50-V-ALU	418.00

For full dimensions of these valves, please ask Sales Office for Viton Right Angle Valves Data Sheet

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
- Right Angle Valves fitted with Allectra dual tapped / 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	£
-	19.1	512-AMV16	420.00
16CF	19.1	512-AMV16-C16	500.00
-	41.3	512-AMV40	520.00
40CF	41.3	512-AMV40-C40	600.00

UHV All metal Valves Replacement Copper Pads

FLANGE	SEAL	PART NUMBER	£
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

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^{-7} mbar-l/sec
Closed leak	$< 10^{-12}$ 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	£
16CF TAPPED	16CF	514-LVF-C16	600.00

Specification Precision Leak Valve

Vacuum	UHV
Min leak	10^{-11} mbar-l/sec
Closed leak	$< 10^{-12}$ 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	£
16CF TAPPED	16CF	514-LVP-C16	1,235.00
40CF	16CF	514-LVP-C40	1,285.00

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 102 - 103

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 104

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 105

Z-Shifters - UHV bellows type
Z-Shifters - Mini Z type
Rotary/Linear Push Pull - Differentially pumped

9.4 UHV MANIPULATORS AND ACCESSORIES

-> Page 106 - 107

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 108 - 109

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 110

Simple Wobble Stick - no locking mechanism
Compact Tilting Port Aligner
Precision Tilting Port Aligner



9.7 In-VACUUM STEPPER MOTORS AND SLIDES

-> Page 111 - 112

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

**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
- 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

**16CF MANUAL KNURLED KNOB types
6 mm shaft**

FLANGE	TRAVEL	PART NUMBER	£
16CF	25 mm	612-CLD25-C16	517.00
16CF	50 mm	612-CLD50-C16	604.00
16CF	100 mm	612-CLD100-C16	808.00

Note: also available on 40CF and other flanges

**16KF MANUAL KNURLED KNOB types
6 mm shaft**

FLANGE	TRAVEL	PART NUMBER	£
16KF	25 mm	612-CLD25-K16	517.00
16KF	50 mm	612-CLD50-K16	604.00
16KF	100 mm	612-CLD100-K16	808.00

Note: also available on 25KF and 40KF flanges

**UHV bellows COMPACT Drives
STEPPER MOTOR driven types - 6 mm shaft**

FLANGE	TRAVEL	PART NUMBER	£
16CF	25 mm	612-CLD25-SM-C16	834.00
16CF	50 mm	612-CLD50-SM-C16	895.00
16CF	100 mm	612-CLD100-SM-C16	1,026.00

Note: also available on KF and other flanges



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 option, Pneumatic actuator option)



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	£
16CF	25 mm	612-LD25-PP-C16	517.00
16CF	50 mm	612-LD50-PP-C16	604.00
16CF	100 mm	612-LD100-PP-C16	781.00

Note: also available on 40CF and other flanges

16KF bellows Linear Drives MANUAL PUSH-PULL types

FLANGE	TRAVEL	PART NUMBER	£
16KF	25 mm	612-LD25-PP-K16	517.00
16KF	50 mm	612-LD50-PP-K16	604.00
16KF	100 mm	612-LD100-PP-K16	781.00

Note: also available on 25KF, 40KF and other flanges

UHV bellows Linear Drives PNEUMATIC types

FLANGE	TRAVEL	PART NUMBER	£
16CF	25 mm	612-LD25-PM-C16	517.00
16CF	50 mm	612-LD50-PM-C16	606.00
16CF	100 mm	612-LD100-PM-C16	763.00

Note: also available on KF and other flanges

UHV bellows Linear Drives OPTIONS

OPTION	PART NUMBER	£
Position indicator	614-LD-PI	26.00
Double axis	614-LD-DD	26.00
Solenoid	24V DC 614-SV-24VDC	65.00
Solenoid	230V AC 614-SV-230V	65.00
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

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.



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

Rotary Motion Drives UHV bellows types, Length from flange 38 mm

FLANGE	SHAFT DIAM.	PART NUMBER	£
16CF	6 mm	611-RD-C16	497.00
40CF	6 mm	611-RD-C40	512.00

Rotary Motion Drives

UHV bellows types, Extended length types

FLANGE	SHAFT DIAM.	PART NUMBER	£
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.



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

Rotary Motion Drives Magnetically Coupled type

FLANGE	TORQUE	PART NUMBER	£
16CF	0.15Nm	611-MRD-C16L	417.00
16CF	0.49Nm	611-MRD-C16	566.00
40CF	2.45Nm	611-MRD-C40	943.00



High Torque magnetic rotary drive on CF40 Flange. With more than 2.4Nm, it can be used for demanding applications.

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 150 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 63-CF: through holes
Through Bore	16CF: 16mm 40CF: 36mm (38mm on request) 63CF: 63mm



621-LT-C63-100



621-LTM-C16-25



613-RLD200-DP-C40 with 16KF Pumping Port



Z-Shifters UHV bellows type

FLANGE	TRAVEL	PART NUMBER	£
40CF	25 mm	621-LT-C40-25	985.00
40CF	50 mm	621-LT-C40-50	1,113.00
40CF	100 mm	621-LT-C40-100	1,455.00
40CF	150 mm	621-LT-C40-150	1,925.00
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	£
16CF	25 mm	621-LTM-C16-25	484.00
16CF	50 mm	621-LTM-C16-50	629.00

Rotary/ Linear Push Pull 200 mm / 500 mm travel Differentially pumped dual O rings

FLANGE	TRAVEL	PART NUMBER	£
40CF	200 mm	613-RLD200-DP-C40	338.00
25KF	200 mm	613-RLD200-DP-K25	338.00
40KF	200 mm	613-RLD200-DP-K40	338.00
40KF	500 mm	613-RLD500-DP-K40	404.00

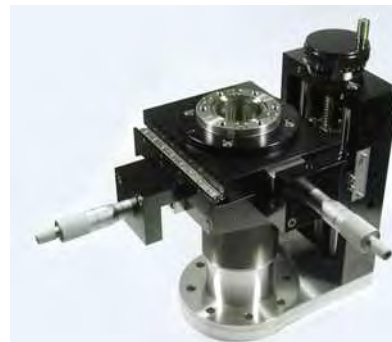
UHV Compact Manipulator CMX

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	£
40CF	50 mm	621-CMX-50-C40	3,969.00
40CF	100 mm	621-CMX-100-C40	4,472.00
40CF	150 mm	621-CMX-150-C40	4,973.00
40CF	200 mm	621-CMX-200-C40	5,476.00

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	£
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

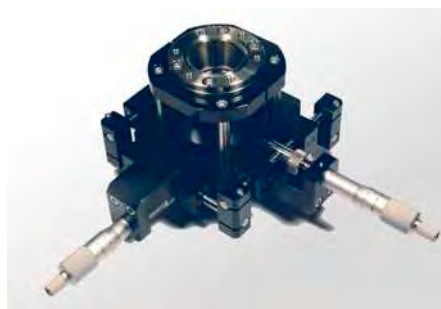
Vacuum	UHV
Temp.	220°C max
Materials	Stainless Steel, Anodised Aluminium
Flanges	40CF with through holes at top and bottom
Bellows	Edge welded 36mm clear bore
Z resolution	0.1 mm
Drive Screw	2-axis type

LONG TRAVEL Z Shifters UHV bellows type

FLANGE	TRAVEL	PART NUMBER	£
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	£
40CF	36 mm	622-XY-12-C40	2,600.00
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	£
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	£
40CF	9.0 & 3.0 mm	611-PRD2-C40-XX	POR



611-PRD-C40-XX

Magnetic Transporters - High Vacuum & UHV

UHV Magnetic Transporters are ideal for long travel applications where High Precision is not required.

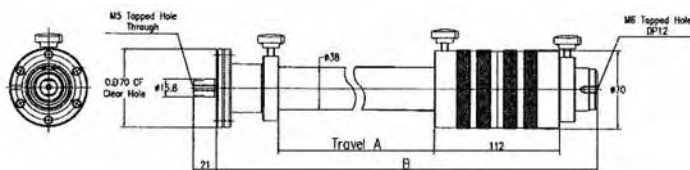
A typical application is sample transfer from Preparation Chamber to Analysis Chamber.

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



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

UHV Magnetic Transporters - No lubricant
Linear and Rotary Motion

FLANGE	TRAVEL	PART NUMBER	£
40CF	500 mm	615-MTP-0500UHV	2,371.00
40CF	600 mm	615-MTP-0600UHV	2,600.00
40CF	800 mm	615-MTP-0800UHV	2,784.00
40CF	1000 mm	615-MTP-1000UHV	2,967.00

HIGH VACUUM Magnetic Transporters
Linear and Rotary Motion

FLANGE	TRAVEL	PART NUMBER	£
40CF	500 mm	615-MTP-0500	1,718.00
40CF	600 mm	615-MTP-0600	1,894.00
40CF	800 mm	615-MTP-0800	2,128.00
40CF	1000 mm	615-MTP-1000	2,343.00

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	£
40CF	ALL	615-LG-OPT	235.00



Quick Access Doors and Load Locks

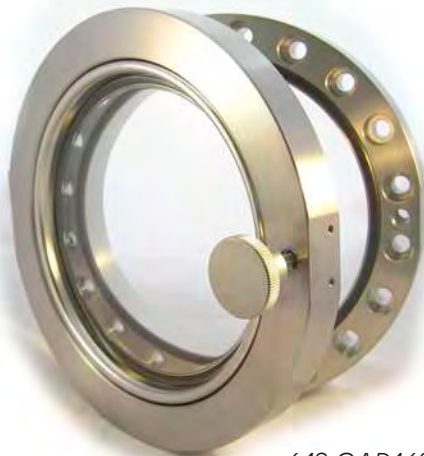
Allectra's QAD series offer unequalled ease of access to the Prep. Chamber work area with maximum open diameter and maximum View Diameter.

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



640-QAD160-VP



640-LLC-100-63-VP



Quick Access Doors NO Viewport Viton door seal, includes Bolt Set

FLANGE	ID (mm)	PART NUMBER	£
63CF	60	640-QAD63	543.00
100CF	95	640-QAD100	769.00
160CF	150	640-QAD160	1,021.00

Quick Access Doors with Viewport Viton door seal, includes Bolt Set

FLANGE	VIEW DIAM.	PART NUMBER	£
63CF	60 mm	640-QAD63-VP	682.00
100CF	90 mm	640-QAD100-VP	913.00
160CF	135 mm	640-QAD160-VP	1,173.00

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*

Load Lock Chambers STAINLESS STEEL with Viton Door & Viewport

DOOR	VALVE FL.	PART NUMBER	£
63CF	63CF	640-LLC-63-63-VP	1,913.00
100CF	63CF	640-LLC-100-63-VP	2,000.00
100CF	100CF	640-LLC-100-100-VP	2,217.00
160CF	100CF	640-LLC-160-100-VP	2,478.00
160CF	160CF	640-LLC-160-160-VP	2,565.00

*Complete Load locks POR
Rectangular Load Locks POR*

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

Simple Wobble Stick No locking mechanism

FLANGE	ANGLE	PART NUMBER	£
40CF	50 mm +/- 22°	630-SWS50-C40	316.00
40CF	100 mm +/- 22°	630-SWS100-C40	563.00

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

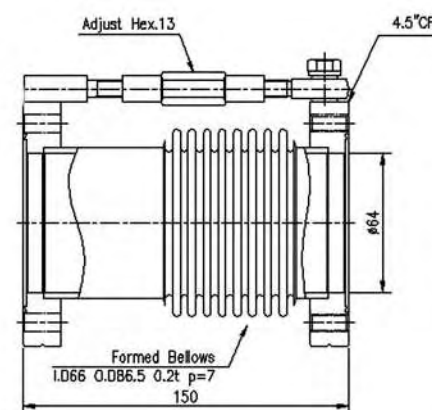
630-SWS50-C40

Compact Tilting Port Aligner 3 Positional rods with +/- 8°

FLANGE	CLEAR BORE	PART NUMBER	£
40CF	36 mm	616-PA-C40	421.00
63CF	64 mm	616-PA-C63	744.00



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	£
40CF	36 mm	616-PPA-C40	752.00
63CF	64 mm	616-PPA-C63	846.00

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	Stainless Steel with Kapton wire
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)

Vacuum Specification

Base Vacuum	
Motor type	
Fine Vacuum	10 ⁻³ mbar, max. 150°C
High Vacuum	10 ⁻⁷ mbar, max. 200°C
UHV (lubricated)	10 ⁻¹⁰ mbar, max. 280°C
UHV (dry)	10 ⁻¹¹ mbar, max. 280°C
Thermocouple	built-in K Type -UHV motors only
Radiation Res.	to 10 ⁶ J/ kg -UHV types only



Back side view with rear shaft and outgassing holes

In-vacuum Stepper Motor: 200 steps per revolution FINE VACUUM Motor

SIZE	HOLD TORQUE	PART NUMBER	£
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	£
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

In-vacuum Stepper Motor: 200 steps per revolution UHV with special lubricant

SIZE	HOLD TORQUE	PART NUMBER	£
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	£
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

Options for Motors:

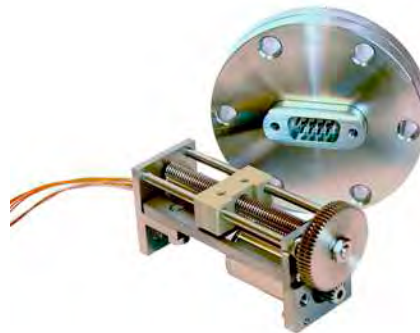
500 steps per revolution-	not available for all types
Current per phase	0.3A, 0.6A, 1.2A, 2.5 A, 5A (depending on size)
Cryo-Motors	for 4K to 40°C
Reduction Gears	4:1 down to 256:1

Other size motors on request

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.

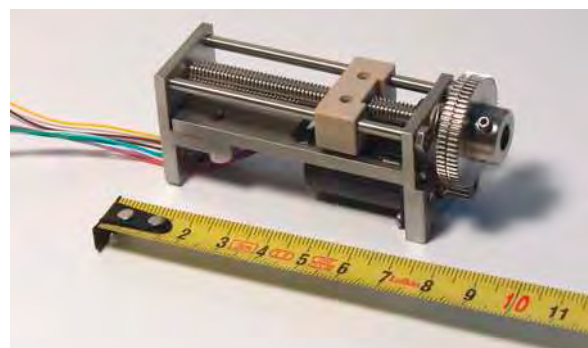


General Specification Miniature Slide 50 mm

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)	

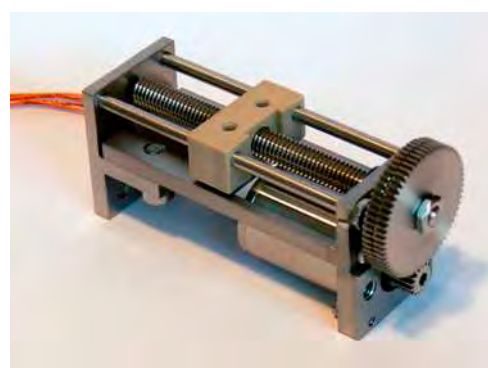
In-vacuum Motorised Slide X AXIS

VACUUM	TRAVEL	PART NUMBER	£
HV	50 mm	673-SLIDE50-HV	POR
UHV-G	50 mm	673-SLIDE50-UHV/G	POR
UHV	50 mm	673-SLIDE50-UHV	POR



In-vacuum Motorised Slide X-Y Slide

VACUUM	TRAVEL	PART NUMBER	£
HV	54 mm	673-SLIDE54XY-HV	POR
UHV-G	54 mm	673-SLIDE54XY-UHV/G	POR
UHV	54 mm	673-SLIDE54XY-UHV	POR



Allectra also offers an X-Y-table which can pass through a CF100 flange (102 mm Ø 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 114

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



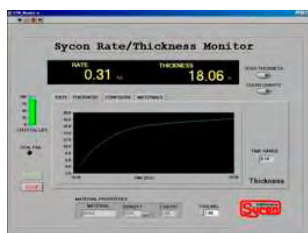
In-vacuum Cables
Replacement Quartz Crystals
Tube connectors



10.2 THIN FILM MONITORS AND CONTROLLERS

-> Page 115

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: Page 37 -



10.3 HIGH VACUUM AND UHV PRESSURE MEASUREMENT

-> Page 116

Pressure Measurement - Wide Range Gauge
Pressure Measurement - UHV Ionisation Gauge

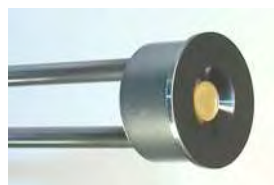
Sensor Heads and Accessories

- Quartz Crystal Sensor Heads
- Bakeable Sensor Heads
- Sensor Heads with built-in oscillator
- Sensor Heads with Shutter
- Water connectors

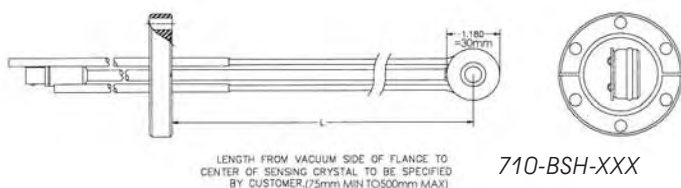
Monitors, Controllers and complete systems - see page 115.

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

The most common head:
710-LPSH

710-RASH



710-BSH-XXX



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!

Sensor Head Feedthrough -
for details refer to Page 37

710-SH

Sensor Heads
Water Cooled and Bare Head

SENSOR	WATERLINES	PART NUMBER	£
LOW PROFILE	YES	710-LPSH	433.00
RIGHT ANGLE	YES	710-RASH	520.00
LOW PROFILE	NO	710-SH	377.00

Bakeable Fixed Sensor Head
Geometry to order

SENSOR	TYPE	PART NUMBER	£
BAKEABLE	STRAIGHT	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	£
LOW PROFILE	STRAIGHT	710-VSO-100	791.00

Low Profile Sensor Heads
Sensor Heads with Shutter

No OF HEADS	SHUTTERS	PART NUMBER	£
1	1	710-LPSH-SHUT	1,512.00
2	1 OPEN / 1 CLOSED	710-DSH-SHUT	1,823.00
-	FOR SINGLE HEAD	710-SHUTTER1	980.00
-	FOR DUAL HEAD	710-SHUTTER2	980.00

ACCESSORIES

Swagelock-connectors / Quartz Crystals / Cables

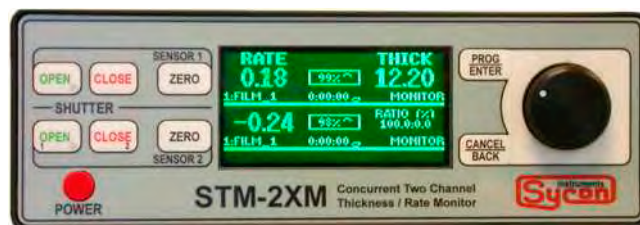
ITEM	PART NUMBER	£
TUBE CONNECTOR	710-SW-32-48	12.00
QUARTZ REPLACEMENTS, 10 off	710-CRYST10	77.00
IN-VAC. CABLE 250 mm	710-IVC-250	73.00
IN-VAC. CABLE 750 mm	710-IVC-750	80.00
IN-VAC. CABLE 910 mm	710-IVC-910	103.00

- For other In-Vacuum Microdot cables see page 66.
- For Feedthroughs see section 3 page 37

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
Resolution	1.0Å	0.13Å	0.13Å
Rate	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	£
Monitor 1 Sensor	710-STM-100	1,645.00
Monitor 2 Sensors	710-STM-2XM	1,734.00
Labview-RS23/485	710-STM-1B	613.00
Labview-USB	710-STM-2	639.00
CONTROLLER	710-STC-2000A	2,805.00

Thin Film Monitors COMPLETE PACKAGES including Monitor, head, feedthrough and cables

PACK TYPE	MONITOR	PART NUMBER	£
PACK1	STM100MF	710-PACK1	1,180.00
2XM	STM-2XM	710-PACK-2XM	2,913.00
PC	STM-1B	710-PACK-PC	1,608.00
PC	STM-2	710-PACK-USB	1,633.00

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 Oscillator Kit with Cables & 10 off Quartz Crystals

DESCRIPTION	PART NUMBER	£
OSCILLATOR	710-OSC	184.00
OSCILLATOR KIT	710-OSC-PACK	258.00

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.

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^{-9} mbar with Micro Hot Cathode Gauge
- "Classical" UHV Bare Ionisation Gauge for pressures down to 10^{-11} mbar

Other pressure measurement systems (e.g. a Fine Vacuum gauge 1400 mbar down to 10^{-3} mbar) are available on request. Please ask for data sheets.



Specification Wide Range Compact Gauge

Flange	40CF (40KF on request)
Range	1000 mbar ... 10^{-9} 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^{-9} MBAR

DESCRIPTION	PART NUMBER	£
40CF gauge head	720-WRG-C40	1,173.00
Controller	720-WRC	852.00
Windows Software	720-SOFTW	95.00

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^{-11} mbar measurement limit



UHV Bare Ionisation Gauge with twin Thorium coated Iridium filaments on 40CF flange

Pressure Measurement UHV Ionisation Gauge 10^{-3} mbar to 10^{-11} mbar

FLANGE	FILAMENT	PART NUMBER	£
40CF	2 x W	720-IG-W	452.00
40CF	2 x Th(Ir)	720-IG-TH	508.00

Pressure Measurement Pirani Gauge 1000mbar to 10^{-3} mbar

FLANGE	TYPE	PART NUMBER	£
16KF	Pirani	720-PIR	POR

Pressure Measurement UHV Controller and Cables

DESCRIPTION		PART NUMBER	£
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 119 - 120

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 121

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 122

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 123 - 124

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 125 - 128

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 129

CF Edge Welded Bellows - 316L Stainless Steel



11.7 CF FLEXIBLE HOSES AND FLEXIBLE COUPLINGS -> Page 130

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

CF Hardware General Introduction

Allectra 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. Allectra's CF flanges are compatible with the Varian Conflat® and other manufacturer's flanges for sizes up to DN200CF. They conform to the Alternative Series of Flanges described in ISO3669. For sizes DN250CF and larger, no International Standard exists. Please ask the Sales Office for advice in this case.



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).

Allectra Flanges

Blank Flanges and Rotatable Inners are 316L

Rotatable Outers are 304

Special Series Flanges are entirely 316LN



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.

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



Standard CF Flanges 316L Stainless Steel

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

This material offers:

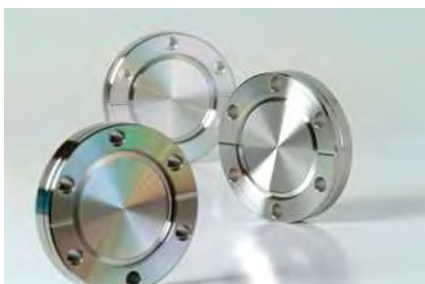
- High Corrosion Resistance
- Good welding characteristics
- No softening (loss of knife edge hardness) at high temperatures.

General Specification CF Flanges

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



411-CFB100



411-CFB40



Fixed BLANK Flange 316L Stainless Steel

SIZE	OD mm (inch)	PART NUMBER	£
16CF	34 (1 1/3")	411-CFB16	10.50
40CF	70 (2 3/4")	411-CFB40	14.00
63CF	114 (4 1/2")	411-CFB63	48.00
100CF	152 (6")	411-CFB100	72.00
160CF	202 (8")	411-CFB160	134.00
200CF	253 (10")	411-CFB200	224.00
250CF	306 (12")	411-CFB250	447.00

Fixed WELD Flange 316L Stainless Steel

SIZE	TUBE OD	PART NUMBER	£
16CF	19	411-CF16-19	10.50
16CF*	19	411-CF16-19X	13.00
40CF	38.1	411-CF40-38	15.00
40CF	41	411-CF40-41	15.00
63CF	63.5	411-CF63-63	52.00
63CF	70	411-CF63-70	52.00
100CF	101.6	411-CF100-101	83.00
100CF	108	411-CF100-108	83.00
160CF	152.4	411-CF160-152	144.00
160CF	159	411-CF160-159	144.00
200CF	206	411-CF200-206	240.00
250CF	256	411-CF250-256	480.00

* Spigotted flange for tube 19mm OD 17mm ID

Fixed Blank Flange TAPPED METRIC 316L Stainless Steel

SIZE	OD mm (inch)	PART NUMBER	£
16CF	34 (1 1/3")	411-CFB16T	16.50
40CF	70 (2 2/3")	411-CFB40T	23.00
63CF	114 (4 1/2")	411-CFB63T	65.00
100CF	152 (6")	411-CFB100T	109.00
160CF	202 (8")	411-CFB160T	172.00
200CF	253 (10")	411-CFB200T	262.00
250CF	306 (12")	411-CFB250T	505.00

Fixed WELD Flange TAPPED METRIC 316L Stainless Steel

SIZE	TUBE OD	PART NUMBER	£
16CF	19	411-CF16-19T	17.50
40CF	38.1	411-CF40-38T	24.50
40CF	41	411-CF40-41T	24.50
63CF	63.5	411-CF63-63T	68.00
63CF	70	411-CF63-70T	68.00
100CF	101.6	411-CF100-101T	113.00
100CF	108	411-CF100-108T	113.00
160CF	152.4	411-CF160-152T	178.00
160CF	159	411-CF160-159T	178.00
200CF	206	411-CF200-200T	278.00
250CF	256	411-CF250-256T	521.00

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

Rotatable BLANK Flange
316L Stainless Steel inners, 304 outers

SIZE	OD mm (inch)	PART NUMBER	£
16CF	34 (1 1/3")	411-CFB16R	15.00
40CF	70 (2 3/4")	411-CFB40R	23.00
63CF	114 (4 1/2")	411-CFB63R	74.00
100CF	152 (6")	411-CFB100R	130.00
160CF	202 (8")	411-CFB160R	217.00
200CF	253 (10")	411-CFB200R	348.00
250CF	306 (12")	411-CFB250R	652.00

Rotatable WELD Flange
316L Stainless Steel inners, 304 outers

SIZE	TUBE OD	PART NUMBER	£
16CF	19	411-CF16-19R	16.00
16CF*	19	411-CF16-19XR	17.50
40CF	38.1	411-CF40-38R	23.00
40CF	41	411-CF40-41R	23.00
63CF	63.5	411-CF63-63R	78.00
63CF	70	411-CF63-70R	78.00
100CF	101.6	411-CF100-101R	135.00
100CF	108	411-CF100-108R	135.00
160CF	152.4	411-CF160-152R	226.00
160CF	159	411-CF160-159R	226.00
200CF	206	411-CF200-200R	361.00
250CF	256	411-CF250-256R	674.00

* Spigotted flange for tube 19od 17id



411-CFB63R

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

SIZE	OD mm (inch)	PART NUMBER	£
16CF	34 (1 1/3")	411-ACFB16	18.00
40CF	70 (2 3/4")	411-ACFB40	23.50
63CF	114 (4 1/2")	411-ACFB63	73.00
100CF	152 (6")	411-ACFB100	127.00
160CF	202 (8")	411-ACFB160	216.00
200CF	253 (10")	411-ACFB200	387.00
250CF	306 (12")	411-ACFB250	740.00

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

SIZE	TUBE OD	PART NUMBER	£
16CF	19	411-ACF16-19	20.00
40CF	38.1	411-ACF40-38	26.00
40CF	41	411-ACF40-41	26.00
63CF	63.5	411-ACF63-63	79.00
63CF	70	411-ACF63-70	79.00
100CF	101.6	411-ACF100-101	135.00
100CF	108	411-ACF100-108	135.00
160CF	152.4	411-ACF160-152	226.00
160CF	159	411-ACF160-159	226.00
200CF	206	411-ACF200-200	396.00
250CF	256	411-ACF250-256	748.00

Special Series CF Flanges 316LN Stainless Steel

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

General Specification CF LN flanges

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



415-CFB16-LN

ROTATABLE WELD Flange Special Series 316LN Stainless Steel

SIZE	TUBE OD	PART NUMBER	£
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-CF200-200R-LN	POR
250CF	256	415-CF250-256R-LN	POR

* Spigotted flange for tube 19mm OD 17mm ID

FIXED BLANK Flange Special Series 316LN Stainless Steel

SIZE	OD mm (inch)	PART NUMBER	£
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	£
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-CF200-20-LN	POR
250CF	256	415-CF250-256-LN	POR

* Spigotted flange for tube 19od 17id

ROTATABLE BLANK Flange Special Series 316LN Stainless Steel

SIZE	OD mm (inch)	PART NUMBER	£
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

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

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

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



General Specification OFE Gaskets

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

CF style OFE gaskets Standard finish, individually packed

SIZE No	ID	PER PKT.	PART NUMBER	£
16CF	16	10	411-CG16-H	10.50
40CF	37	10	411-CG40-H	15.50
63CF	63	10	411-CG63-H	28.00
100CF	101	10	411-CG100-H	36.50
160CF	152	5	411-CG160-H	30.50
200CF	203	5	411-CG200-H	43.50
250CF	254	5	411-CG250-H	130.00

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

SIZE No	ID	PER PKT.	PART NUMBER	£
16CF	17	5	411-CG16-W	8.00
40CF	40	5	411-CG40-W	9.50
63CF	67	5	411-CG63-W	16.50
100CF	101	5	411-CG100-A	50.00
160CF	152	5	411-CG160-A	54.00
200CF	203	5	411-CG200-A	86.00
250CF	254	1	411-CG250-A	182.00

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	£
16CF	16	5	411-CG16-SP	11.00
40CF	37	5	411-CG40-SP	20.00
63CF	63	5	411-CG63-SP	28.00
100CF	101	5	411-CG100-SP	42.00
160CF	152	5	411-CG160-SP	68.00
200CF	203	5	411-CG200-SP	85.00
250CF	254	1	411-CG250-SP	182.00

Note: Annealed silver plated gaskets on request

CF style VITON gaskets packs of 2

SIZE	ID	No PER PKT.	PART NUMBER	£
16CF	18	2	411-VG16-2	8.00
40CF	40	2	411-VG40-2	8.70
63CF	65	2	411-VG63-2	30.50
100CF	102	2	411-VG100-2	36.50
160CF	156	2	411-VG160-2	48.00
200CF	203	2	411-VG200-2	81.00
250CF	254	2	411-VG250-2	101.00



411-CG40-W



Various sizes of
Viton Gaskets

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 11.5) which are recommended for frequently baked systems



General Specification Bolts

Material	
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 length	Tapped 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.

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

SIZE	LENGTH	PART NUMBER	£
M4	16	411-M4X16SET-SH	9.00
M4	20	411-M4X20SET-SH	9.50
M4	30	411-M4X30SET-SH	10.00
M6	35	411-M6X35SET-SH	15.50
M6	50	411-M6X50SET-SH	POR
M8	30	411-M8X30SET-SH	20.00
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	£
M6	25	411-M6X25SET-HX	8.70
M6	35	411-M6X35SET-HX	8.70
M6	55	411-M6X55SET-HX	18.00
M8	35	411-M8X35SET-HX	15.00
M8	50	411-M8X50SET-HX	19.00
M8	60	411-M8X60SET-HX	29.50
M8	70	411-M8X70SET-HX	30.50

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

SIZE	LENGTH	PART NUMBER	£
M4	25	411-M4-STUD-25	7.00
M6	40	411-M6-STUD-40	9.50
M8	60	411-M8-STUD-60	19.00

CF Bolt Thread Lubricant "Anti-Seize"

SIZE	PART NUMBER	£
30g	330-ANTISEIZE	13.00



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

SIZE	LENGTH	PART NUMBER	£
M4	16	411-M4X16SET-316SH	19.00
M4	20	411-M4X20SET-316SH	21.00
M4	30	411-M4X30SET-316SH	21.00
M6	25	411-M6X25SET-316SH	17.50
M6	35	411-M6X35SET-316SH	17.50
M6	55	411-M6X55SET-316HX	35.50
M8	35	411-M8X35SET-316HX	29.60
M8	50	411-M8X50SET-316HX	37.40
M8	60	411-M8X60SET-316HX	56.50
M8	70	411-M8X70SET-316HX	58.00

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 123

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

SIZE	LENGTH	PART NUMBER	£
M4	16	411-M4X16SET-SH-SP	19.00
M4	20	411-M4X20SET-SH-SP	20.00
M4	30	411-M4X30SET-SH-SP	17.50
M6	25	411-M6X25SET-HX-SP	17.50
M6	35	411-M6X35SET-HX-SP	25.00
M6	55	411-M6X55SET-HX-SP	33.00
M8	35	411-M8X35SET-HX-SP	35.00
M8	50	411-M8X50SET-HX-SP	42.50
M8	60	411-M8X60SET-HX-SP	52.00
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	£
16CF	3	411-NP16-3	7.50
40CF	3	411-NP40-3	8.00
63CF	4	411-NP63-4	14.50
100CF	8	411-NP100-8	29.00
160CF	10	411-NP160-10	POR

**Double Sided CF Flanges**

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

**Specification Double Sided Flanges**

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

**CF Double Sided BLANK Flanges
316L Stainless steel**

SIZE	Thickness	PART NUMBER	£
16CF	7.3 mm	412-CFBD16	30.00
40CF	12.7 mm	412-CFBD40	42.00
63CF	17.5 mm	412-CFBD63	92.00
100CF	20 mm	412-CFBD100	140.00
160CF	22 mm	412-CFBD160	191.00
200CF	24.5 mm	412-CFBD200	295.00

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

Zero Length Adaptors are the easiest and most compact way to connect different flange sizes. The smaller flange profile has metric tapped threads.

CF Flange Adaptors with tube may be used when a tapped flange cannot be accommodated.

CF Flanges With Tube are intended for butt welding to Stainless Steel tube.



Specification CF Flange Adaptors & Tube Fittings

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



412-CF100-40



412-CF100-40
The smaller flange is rotatable



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

Other sizes and lengths on request - please call Sales Office

CF Zero Length Flange Adaptors 316L Stainless Steel

FLANGE 1	FLANGE 2	PART NUMBER	£
40CF	16CF	412-CFZ40-16	36.00
63CF	16CF	412-CFZ63-16	81.00
63CF	40CF	412-CFZ63-40	84.00
100CF	40CF	412-CFZ100-40	108.00
100CF	63CF	412-CFZ100-63	124.00
160CF	40CF	412-CFZ160-40	171.00
160CF	63CF	412-CFZ160-63	186.00
160CF	100CF	412-CFZ160-100	197.00
200CF	63CF	412-CFZ200-63	275.00
200CF	100CF	412-CFZ200-100	290.00
200CF	160CF	412-CF200-160	308.00

Note: Other sizes and multiples on one flange on request

CF Flange Adaptors with Tube 316L Stainless Steel

FLANGE 1-2	LENGTH	PART NUMBER	£
40-16CF	45	412-CF40-16	65.00
63-40CF	75	412-CF63-40	120.00
100-40CF	95	412-CF100-40	195.00
100-63CF	95	412-CF100-63	208.00
160-100CF	105	412-CF160-100	339.00
200-100CF	115	412-CF200-100	456.00
200-160CF	115	412-CF200-160	528.00
250-200CF	125	412-CF250-200	POR

CF Fixed Flange with Tube 316L Stainless Steel

FLANGE	LENGTH	TUBE OD	PART NUMBER	£
16CF	38	19	413-CFT16	26.00
40CF	63	40	413-CFT40	36.00
63CF	105	70	413-CFT63	102.00
100CF	135	108	413-CFT100	182.00
160CF	167	159	413-CFT160	291.00
200CF	203	206	413-CFT200	456.00
250CF	250	256	413-CFT250	POR

CF Rotatable Allectra Flange with Tube 316L Stainless Steel

FLANGE	LENGTH	PART NUMBER	£
16CF	38	413-ACFT16	43.00
40CF	63	413-ACFT40	60.00
63CF	105	413-ACFT63	121.00
100CF	135	413-ACFT100	213.00
160CF	167	413-ACFT160	317.00
200CF	203	413-ACFT200	POR
250CF	250	413-ACFT250	POR

CF Straight Connector, Elbow, Tee and Reducing Tee

Allectra 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	£
16CF	38	413-CFX2-C16	47.00
40CF	63	413-CFX2-C40	65.00
63CF	105	413-CFX2-C63	169.00
100CF	135	413-CFX2-C100	269.00
160CF	167	413-CFX2-C160	417.00
200CF	203	413-CFX2-C200	669.00
250CF	250	413-CFX2-C250	POR

Note: Other lengths on request

**CF Elbow
316L Stainless Steel**

FLANGE	LENGTH A	PART NUMBER	£
16CF	38	413-CFBOW-C16	59.00
40CF	63	413-CFBOW-C40	82.00
63CF	105	413-CFBOW-C63	217.00
100CF	135	413-CFBOW-C100	343.00
160CF	167	413-CFBOW-C160	520.00
200CF	203	413-CFBOW-C200	847.00
250CF	250	413-CFBOW-C250	POR

Note: Other lengths on request

**CF TEE PIECE
316L Stainless Steel**

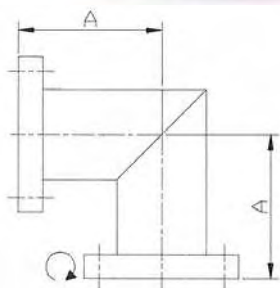
FLANGE	LENGTH A	PART NUMBER	£
16CF	38	413-CFX3-C16	86.00
40CF	63	413-CFX3-C40	120.00
63CF	105	413-CFX3-C63	321.00
100CF	135	413-CFX3-C100	508.00
160CF	167	413-CFX3-C160	773.00
200CF	203	413-CFX3-C200	1,304.00
250CF	250	413-CFX3-C250	POR

Note: Other lengths on request

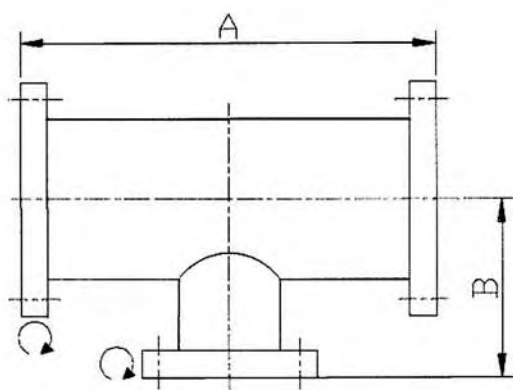
**CF REDUCING TEE PIECE
316L Stainless Steel**

FLANGE	LENGTHS A / B	PART NUMBER	£
40 - 16CF	126/50	413-CFX3-C40-C16	113.00
63 - 40CF	210/75	413-CFX3-C63-C40	239.00
100 - 63CF	270/100	413-CFX3-C100-C63	456.00
160 - 100CF	334/125	413-CFX3-C160-C100	673.00
200 - 160CF	406/150	413-CFX3-C200-C160	1,086.00

Note: Other lengths and flange combinations on request



413-CFBOW-C40
Depending on size,
mitted elbows or
curved ones are
offered



413-CFX3-C40

CF 4 Way Crosses

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

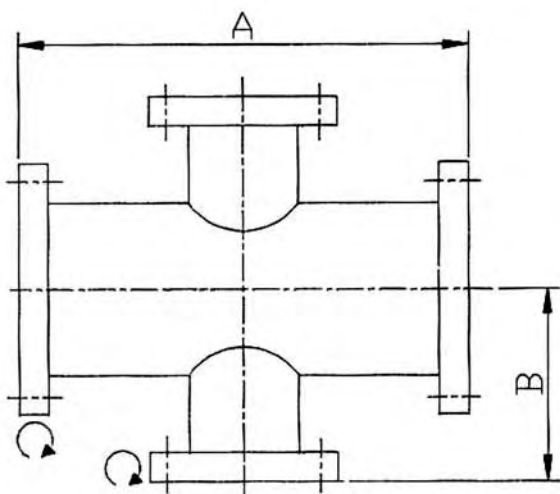
Special Fittings built to Order:

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

Please call Sales Office for details

Specification CF Fittings

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



Reducing cross
413-CFX4-C63-40



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

CF STANDARD 4 Way cross 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER	£
16CF	38	413-CFX4-C16	134.00
40CF	63	413-CFX4-C40	169.00
63CF	105	413-CFX4-C63	421.00
100CF	135	413-CFX4-C100	669.00
160CF	167	413-CFX4-C160	1,052.00
200CF	203	413-CFX4-C200	1,695.00
250CF	250	413-CFX4-C250	POR

Note: Other lengths on request

CF SPHERICAL 4 Way cross 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER	£
16CF	38	413-CFX4-C16S	195.00
40CF	63	413-CFX4-C40S	466.00
63CF	105	413-CFX4-C63S	745.00
100CF	135	413-CFX4-C100S	1,173.00
160CF	167	413-CFX4-C160S	1,869.00
200CF	203	413-CFX4-C200S	POR
250CF	250	413-CFX4-C250S	POR

Note: Other lengths on request

CF REDUCING 4 Way Cross 316L Stainless Steel

FLANGES	LENGTHS	PART NUMBER	£
40 - 16CF	126/50	413-CFX4-C40-C16	152.00
63 - 40CF	210/75	413-CFX4-C63-C40	282.00
100 - 63CF	270/100	413-CFX4-C100-C63	526.00
160 - 100CF	334/125	413-CFX4-C160-C100	817.00
200 - 160CF	406/150	413-CFX4-C200-C160	1,347.00

Note: Other lengths and flange combinations on request

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.

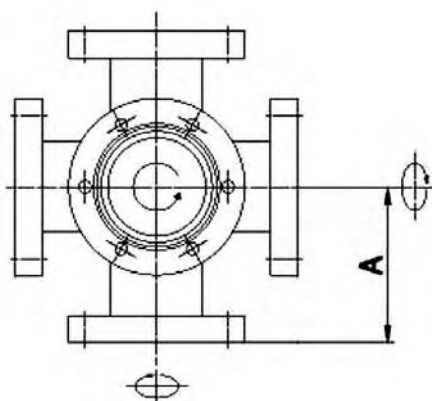
Custom versions with extra or less ports and other Flanges are available on request.

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	£
16CF	38	413-CFX6-C16	195.00
40CF	63	413-CFX6-C40	256.00
63CF	105	413-CFX6-C63	626.00
100CF	135	413-CFX6-C100	1,021.00
160CF	167	413-CFX6-C160	1,631.00
200CF	203	413-CFX6-C200	2,504.00
250CF	250	413-CFX6-C250	POR

Note: Other lengths on request

CF SPHERICAL 6 Way cross
316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER	£
40CF	63	413-CFX6-C40S	290.00
63CF	105	413-CFX6-C63S	688.00
100CF	135	413-CFX6-C100S	1,117.00
160CF	167	413-CFX6-C160S	1,826.00
200CF	203	413-CFX6-C200S	2,906.00
250CF	250	413-CFX6-C250S	POR

Note: Other lengths on request

CF REDUCING 6 Way Cross
316L Stainless Steel

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

Note: Other lengths and flange combinations on request



413-CFX6-C40



413-CFX6-C40S

CF Edge Welded Bellows

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

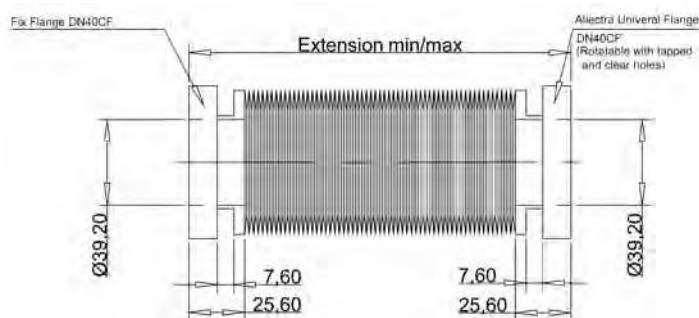


General Specification Edge Welded Bellows

Vacuum	UHV to 10 ⁻¹² mbar		
Material	316L Stainless steel (1.4404)		
Temp.	450°C max		
Mag perm.	<1.05 (annealed)		
Clear Bore ID	40CF 39.2mm		
Length over Flanges (mm)			
Travel	Min.	Free	Max.
25 mm	57,2	70	82,2
50 mm	63.2	90	113.2
100 mm	75.2	126	175.2
150 mm	87.2	165	237.2
200 mm	99.2	200	299.2

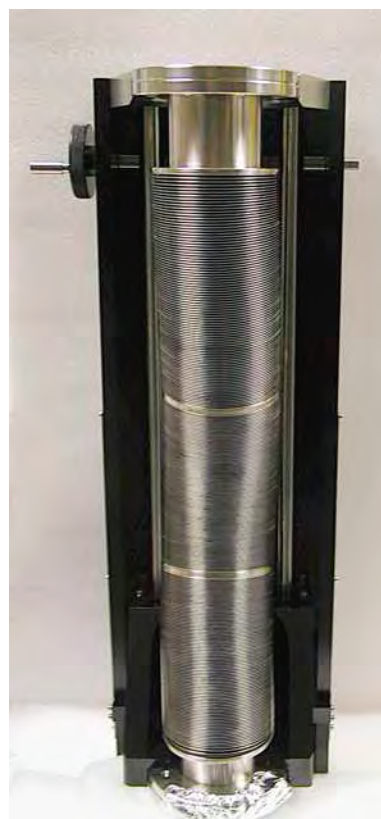
CF Edge Welded Bellows 316L Stainless Steel

FLANGE	TRAVEL	PART NUMBER	£
40CF	25 mm	453-EWB-C40-25	369.00
40CF	50 mm	453-EWB-C40-50	469.00
40CF	100 mm	453-EWB-C40-100	645.00
40CF	150 mm	453-EWB-C40-150	855.00



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

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



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

CF Flexible Hoses

CF Flexible Couplings

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

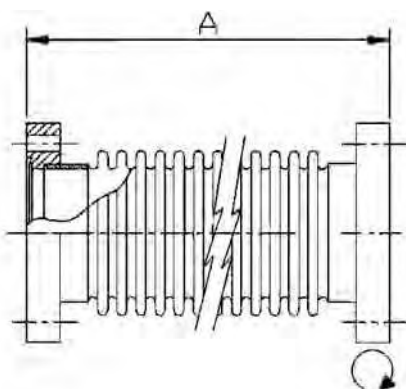
They are used, for example, as pumping lines.

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



Specification Flexible Hoses

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

CF Flexible Hoses
316L Stainless Steel

FLANGE	LENGTH	PART NUMBER	£
16CF	250 mm	452-HOSE-C16-0250	73.00
16CF	500 mm	452-HOSE-C16-0500	82.00
16CF	1000 mm	452-HOSE-C16-1000	95.00
16CF	2000 mm	452-HOSE-C16-2000	121.00
40CF	500 mm	452-HOSE-C40-0500	113.00
40CF	1000 mm	452-HOSE-C40-1000	139.00
40CF	2000 mm	452-HOSE-C40-2000	173.00
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	£
16CF	110 mm	452-FLX-C16-110	88.00
40CF	160 mm	452-FLX-C40-160	132.00
63CF	250 mm	452-FLX-C63-250	280.00
100CF	250 mm	452-FLX-C100-250	399.00
160CF	270 mm	452-FLX-C160-270	630.00
200CF	300 mm	452-FLX-C200-300	1,000.00

Note: Other lengths on request

KF Vacuum Hardware

12.1 KF CLAMPS AND CENTRING RINGS
-> Page 132

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 133 - 135

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



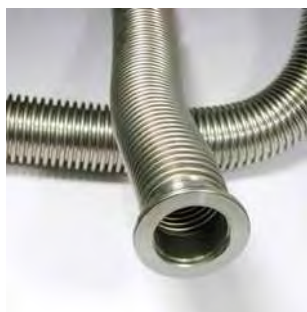
KF Straight Connector - Stainless Steel
 KF Conical Reducers - Stainless Steel
 KF Elbows - Stainless Steel
 KF Tee Pieces - Stainless Steel
 KF Reducing Tee Pieces - Stainless Steel



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 136 - 137

KF Flexible Hoses - Stainless Steel
 KF Flexible Hoses with protective braid


12.4 EVAC CLAMPS AND FITTINGS
-> Page 138


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.

General Specification 431-KFXX-C

Vacuum	High Vacuum
Material	Aluminium



431-KF25-CQ

For overpressure applications, please use EVAC CHAIN CLAMPS. Together with Aluminium metal seals a pressure range from 10^{-11} 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.



KF Clamps STANDARD Aluminium type with Wingnut

FLANGE	THICKNESS	PART NUMBER	£
10/16KF	16	431-KF16-C	3.00
20/25KF	16	431-KF25-C	3.50
32/40KF	16	431-KF40-C	4.40
50KF	25	431-KF50-C	9.00

KF Clamps QUICK CLAMPS with lever action

FLANGE	THICKNESS	PART NUMBER	£
10/16KF	16	431-KF16-CQ	9.00
20/25KF	16	431-KF25-CQ	10.50
32/40KF	16	431-KF40-CQ	12.40
50KF	25	431-KF50-CQ	POR

KF Centring Ring ALUMINIUM with Viton O-Ring

FLANGE	THICKNESS	PART NUMBER	£
10KF	8	431-KF10-CR-AV	3.00
16KF	8	431-KF16-CR-AV	3.00
25KF	8	431-KF25-CR-AV	4.00
40KF	8	431-KF40-CR-AV	5.30
50KF	8	431-KF50-CR-AV	7.00

KF Centring Ring STAINLESS STEEL with Viton O-Ring

FLANGE	THICKNESS	PART NUMBER	£
10KF	8	431-KF10-CR-SV	3.50
16KF	8	431-KF16-CR-SV	3.50
25KF	8	431-KF25-CR-SV	4.30
40KF	8	431-KF40-CR-SV	5.50
50KF	8	431-KF50-CR-SV	8.00

KF Centring Ring OUTER TYPE with Viton O-Ring

FLANGE	THICKNESS	PART NUMBER	£
10/16KF	7	431-KF16-CR-EX	6.00
20/25KF	7	431-KF25-CR-EX	6.50
32/40KF	7	431-KF40-CR-EX	7.50
50KF	7	431-KF50-CR-EX	10.50

KF Centring Ring ADAPTOR RING Aluminium with Viton O-Ring

FLANGE	THICKNESS	PART NUMBER	£
10/16KF	7	431-KF16-10-CR	5.50
20/25KF	7	431-KF25-20-CR	5.70
32/40KF	7	431-KF40-32-CR	8.00

KF Flanges Aluminium & Stainless Steel

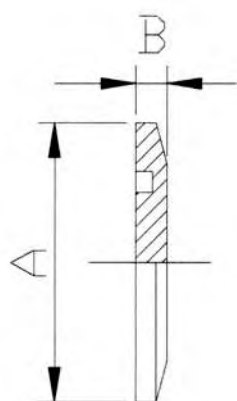
KF Flanges with Tube

KF Spare Viton O-Rings



General 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	Aluminium or Stainless Steel 316L, Glass and Quartz on request



Drawing of KF Blank Flange

Thickenss B is for all sizes
(KF10 to KF63) 5mm

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	£
10KF	30	431-KF10-B-AL	4.50
16KF	30	431-KF16-B-AL	4.50
25KF	40	431-KF25-B-AL	5.00
40KF	55	431-KF40-B-AL	5.60
50KF	75	431-KF50-B-AL	9.50

KF Flange STAINLESS STEEL

FLANGE	A (mm)	PART NUMBER	£
10KF	30	431-KF10-B	4.00
16KF	30	431-KF16-B	4.00
25KF	40	431-KF25-B	5.00
40KF	55	431-KF40-B	5.70
50KF	75	431-KF50-B	10.50
63KF	87	E32.063003.120.563	POR

KF Flange with Tube SHORT STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER	£
10KF	30	433-KF10-TS	8.00
16KF	30	433-KF16-TS	8.70
25KF	30	433-KF25-TS	10.50
40KF	30	433-KF40-TS	17.50
50KF	30	433-KF50-TS	26.00
63KF	30	E32.063005.111.363	POR

KF Flange with Tube LONG STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER	£
10KF	70	433-KF10-T	15.50
16KF	70	433-KF16-T	15.50
25KF	70	433-KF25-T	17.50
40KF	70	433-KF40-T	23.00
50KF	70	433-KF50-T	36.00
63KF	60	E32.063005.112.363	POR

KF Replacement O-Rings VITON

FLANGE	No PER PKT.	PART NUMBER	£
10KF	5	431-KF10-O	5.50
16KF	5	431-KF16-O	5.50
25KF	5	431-KF25-O	7.00
40KF	5	431-KF40-O	8.00
50KF	5	431-KF50-O	11.50
63KF	5	431-KF63-O	POR

KF Straight Connectors

KF Tee Pieces and Reducing Tees

KF Elbows

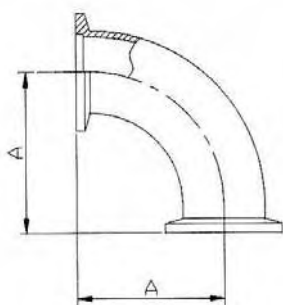
KF Conical Reducers

Non standard length fittings and special versions can be built to order.

Conical Reducers provide a high conductivity solution for matching different Flange sizes

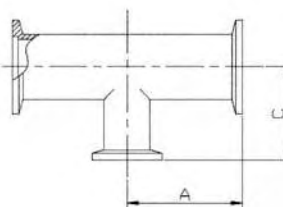
Specification KF Fittings

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

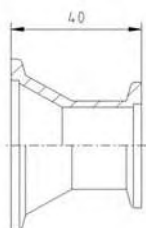


dimensions of Elbow

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	£
10KF	70	433-KFX2-10	22.00
16KF	70	433-KFX2-16	22.00
25KF	70	433-KFX2-25	30.00
40KF	70	433-KFX2-40	42.00
50KF	70	433-KFX2-50	49.00
63KF	176	E33.063003.111.563	POR

KF Elbows
STAINLESS STEEL

FLANGE	A	PART NUMBER	£
10KF	70	433-KFL-10	33.00
16KF	70	433-KFL-16	33.00
25KF	70	433-KFL-25	33.00
40KF	70	433-KFL-40	37.50
50KF	70	433-KFL-50	53.00
63KF	88	E33.063003.150.563	POR

KF Tee Pieces
STAINLESS STEEL

FLANGE	B	PART NUMBER	£
10KF	60	433-KFX3-10	36.50
16KF	80	433-KFX3-16	38.50
25KF	100	433-KFX3-25	40.00
40KF	130	433-KFX3-40	52.00
50KF	140	433-KFX3-50	78.00
63KF	176	E33.063003.160.563	POR

KF REDUCING Tee Pieces
STAINLESS STEEL

FLANGE	A/C	PART NUMBER	£
25KF/16KF	50/40	433-KFX3-25-16	52.00
40KF/16KF	65/40	433-KFX3-40-16	65.00
40KF/25KF	65/50	433-KFX3-40-25	65.00
50KF/25KF	70/50	433-KFX3-50-25	78.00
50KF/40KF	70/65	433-KFX3-50-40	96.00

KF Conical Reducers
STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER	£
25KF/16KF	40	433-KCR25-16	26.00
40KF/16KF	40	433-KCR40-16	31.00
40KF/25KF	40	433-KCR40-25	33.00
50KF/25KF	40	433-KCR50-25	53.00
50KF/40KF	40	433-KCR50-40	58.00
63KF/50KF	40	E33.063003.140.365	POR

KF 4 and 6 Way Crosses

KF Transparent Viewport Flange

KF Mesh Protective Centring Ring

Standard 4 and 6 way Crosses are shown

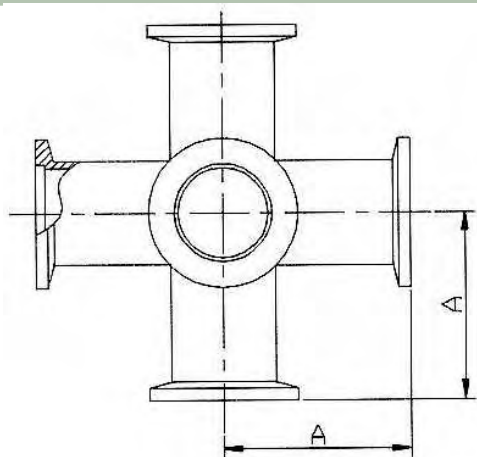
Optionally Crosses can be built to order with custom port length and any required Flanges

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^{-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



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	£
16KF	40	433-KFX4-16	44.00
25KF	50	433-KFX4-25	52.00
40KF	65	433-KFX4-40	74.00
50KF	70	433-KFX4-50	122.00
63KF	88	E33.063007.171.763	POR

KF 6 Way Crosses STAINLESS STEEL

FLANGE	A	PART NUMBER	£
16KF	40	433-KFX6-16	105.00
25KF	50	433-KFX6-25	118.00
40KF	65	433-KFX6-40	144.00
50KF	70	433-KFX6-50	192.00

KF Transparent Viewflange Including O-Ring and clamp

FLANGE	VIEW DIAM	PART NUMBER	£
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	£
16KF	0.02 mm	431-KF16-MESH-SV	20.00
25KF	0.02 mm	431-KF25-MESH-SV	25.00
40KF	0.02 mm	431-KF40-MESH-SV	34.00
50KF	0.02 mm	431-KF50-MESH-SV	43.00

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	£
16KF	250	452-HOSE-K16-0250	26.00
16KF	500	452-HOSE-K16-0500	29.00
16KF	1000	452-HOSE-K16-1000	36.50
16KF	2000	452-HOSE-K16-2000	48.00
25KF	500	452-HOSE-K25-0500	37.50
25KF	1000	452-HOSE-K25-1000	43.50
25KF	2000	452-HOSE-K25-2000	65.00
40KF	500	452-HOSE-K40-0500	59.00
40KF	1000	452-HOSE-K40-1000	69.50
40KF	2000	452-HOSE-K40-2000	96.00
50KF	500	452-HOSE-K50-0500	78.00
50KF	1000	452-HOSE-K50-1000	96.00
50KF	2000	452-HOSE-K50-2000	117.00

Flexible Hoses - Tube Termination - Unflanged 316L Stainless Steel

NOM. SIZE	LENGTH	PART NUMBER	£
DN16	500	452-HOSE16-0500	26.00
DN16	1000	452-HOSE16-1000	34.00
DN16	2000	452-HOSE16-2000	43.50
DN25	500	452-HOSE25-0500	35.00
DN25	1000	452-HOSE25-1000	41.00
DN25	2000	452-HOSE25-2000	61.00
DN40	500	452-HOSE40-0500	55.50
DN40	1000	452-HOSE40-1000	65.00
DN40	2000	452-HOSE40-2000	88.00
DN50	500	452-HOSE50-0500	74.00
DN50	1000	452-HOSE50-1000	91.00
DN50	2000	452-HOSE50-2000	113.00

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

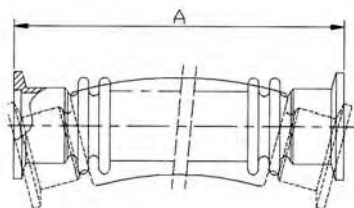
KF Braided Flexible Hoses and KF PVC Hose

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.

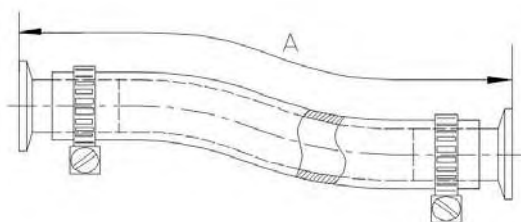
For a low cost alternative to Flexible Hoses, Allectra offers PVC Hose.

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



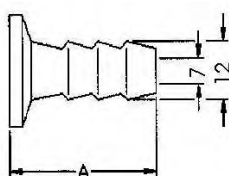
452-BHOSE-K40-0500



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)



452-ALHF-K16

KF Braided Flexible Connectors STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER	£
16KF	500	452-BHOSE-K16-0500	109.00
16KF	1000	452-BHOSE-K16-1000	121.00
25KF	500	452-BHOSE-KF25-0500	130.00
25KF	1000	452-BHOSE-K25-1000	152.00
40KF	500	452-BHOSE-K40-0500	165.00
40KF	1000	452-BHOSE-K40-1000	191.00
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

FLANGE	LENGTH	PART NUMBER	£
16KF	500	452-PVC-K16-0500	28.00
16KF	1000	452-PVC-K16-1000	33.00
25KF	500	452-PVC-KF25-0500	35.00
25KF	1000	452-PVC-K25-1000	41.00
40KF	500	452-PVC-K40-0500	56.50
40KF	1000	452-PVC-K40-1000	68.00
50KF	500	452-PVC-K50-0500	78.00
50KF	1000	452-PVC-K50-1000	91.00

KF Flexible Coupling High-Flexibility

FLANGE	LENGTH	PART NUMBER	£
16KF	60+/-5	452-KFX2-16-BEL	63.00
25KF	60+/-5	452-KFX2-25-BEL	73.00
40KF	120+/-10	452-KFX2-40-BEL	94.00

KF Flange for PVC Hose ALUMINIUM

FLANGE	LENGTH	PART NUMBER	£
16KF	30	452-ALHF-K16	13.00
25KF	30	452-ALHF-K25	14.00
40KF	30	452-ALHF-K40	16.00

EVAC Chain-Clamps and Fittings



Glass components with Chain-Clamp



Chain-Clamps for ISO-K 63



CeFIX Flanges with Gasket



sTeRlc Clamp Flange, closed with an all metal Chain-Clamp

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

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

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

sTeRlc 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

Allectra is an authorised Distributor for EVAC products.

ISO Flange System

13.1 ISO CLAMPS AND GASKETS
-> Page 140 - 142

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 143 - 144

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 145 - 146

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

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.

ISO Double Claw Clamps ZINC PLATED STEEL

FLANGE	TYPE	PART NUMBER	£
63-250 ISO-K	DOUBLE	441-DCC-063-250-S	4.00
320-500 ISO-K	DOUBLE	441-DCC-320-500-S	5.20

ISO Double Claw Clamps STAINLESS STEEL

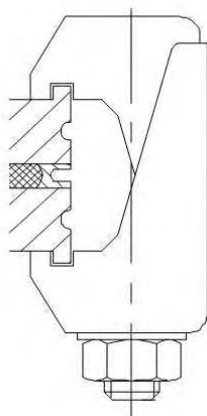
FLANGE	TYPE	PART NUMBER	£
63-250 ISO-K	DOUBLE	441-DCC-063-250-SS	9.50
320-630 ISO-K	DOUBLE	441-DCC-320-630-SS	14.00

ISO Single Claw Clamps ZINC PLATED STEEL

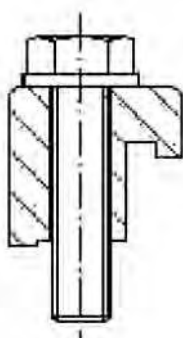
FLANGE	TYPE	PART NUMBER	£
63-100 ISO-K	SINGLE	441-SCC-063-100-S	3.00
160-250 ISO-K	SINGLE	441-SCC-160-250-S	3.50
320-500 ISO-K	SINGLE	441-SCC-320-500-S	5.00

ISO Single Claw Clamps STAINLESS STEEL

FLANGE	TYPE	PART NUMBER	£
63-100 ISO-K	SINGLE	441-SCC-063-100-SS	6.00
160-250 ISO-K	SINGLE	441-SCC-160-250-SS	7.00
320-500 ISO-K	SINGLE	441-SCC-320-500-SS	10.50
630 ISO-K	SINGLE	441-SCC-630-SS	12.00



441-DCC



441-SCC

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.



ISO Centring Ring with O-Ring ALUMINIUM/ Viton

FLANGE	TYPE	PART NUMBER	£
63 ISO	AI/VITON*	441-ISO063-CR-AV	15.00
100 ISO	AI/VITON*	441-ISO100-CR-AV	18.00
160 ISO	AI/VITON*	441-ISO160-CR-AV	22.00
200 ISO	AI/VITON*	441-ISO200-CR-AV	28.00
250 ISO	AI/VITON*	441-ISO250-CR-AV	49.00
320 ISO	AI/VITON	441-ISO320-CR-AV	76.00
400 ISO	AI/VITON	441-ISO400-CR-AV	95.00
500 ISO	AI/VITON	441-ISO500-CR-AV	122.00
630 ISO	AI/VITON	441-ISO630-CR-AV	171.00

Note: Items marked * are available with Outer AI ring to order

ISO Centring Ring with O-Ring STAINLESS STEEL/ Viton

FLANGE	TYPE	PART NUMBER	£
63 ISO	SS/VITON*	441-ISO063-CR-SV	19.00
100 ISO	SS/VITON*	441-ISO100-CR-SV	28.00
160 ISO	SS/VITON*	441-ISO160-CR-SV	39.00
200 ISO	SS/VITON*	441-ISO200-CR-SV	57.00
250 ISO	SS/VITON*	441-ISO250-CR-SV	69.00
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

Note: Items marked * are available with Outer AI ring to order

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.

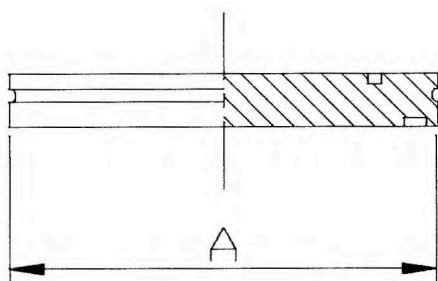
ISO-F (LF Bolt Flanges) available on request.

Aluminium ISO-K Flanges are available to order.



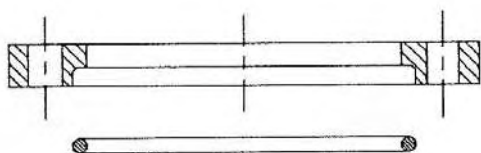
General Specification ISO Blank Flanges

Vacuum	to 10 ⁻⁹ 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.

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

ISO-K Blank Flanges
STAINLESS STEEL

FLANGE	A (mm)	PART NUMBER	£
63 ISO-K	95	441-ISO063-B	34.00
100 ISO-K	130	441-ISO100-B	45.00
160 ISO-K	180	441-ISO160-B	75.00
200 ISO-K	240	441-ISO200-B	137.00
250 ISO-K	290	441-ISO250-B	159.00
320 ISO-K	370	441-ISO320-B	280.00
400 ISO-K	450	441-ISO400-B	380.00
500 ISO-K	550	441-ISO500-B	543.00
630 ISO-K	690	441-ISO630-B	923.00

ISO-K WELD FLANGES Please call Sales Office

ISO-F Rotatable Bolt Rings
including Retaining Ring

FLANGE	OD (mm)	PART NUMBER	£
63 ISO-F	130	441-ISO063-COL	39.00
100 ISO-F	165	441-ISO100-COL	56.00
160 ISO-F	225	441-ISO160-COL	113.00
200 ISO-F	285	441-ISO200-COL	152.00
250 ISO-F	335	441-ISO250-COL	182.00
320 ISO-F	425	441-ISO320-COL	247.00
400 ISO-F	510	441-ISO400-COL	378.00
500 ISO-F	610	441-ISO500-COL	560.00
630 ISO-F	750	441-ISO630-COL	913.00

ISO-F Bolt Sets for joining to Tapped Flanges
STAINLESS STEEL - Packets of 25

FLANGE	No PER PACK	PART NUMBER	£
63 ISO-F	M8-20	411-M8X20	14.00
100 ISO-F	M8-20	411-M8X20	14.00
160 ISO-F	M10-30	411-M10X30	30.00
200 ISO-F	M10-30	411-M10X30	30.00
250 ISO-F	M10-30	411-M10X30	30.00
320 ISO-F	M12-40	411-M12X40	30.00
400 ISO-F	M12-40	411-M12X40	45.00
500 ISO-F	M12-40	411-M12X40	45.00
630 ISO-F	M12-40	411-M12X40	45.00

Note: Longer bolts for use with 2 bolt flanges on request

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 ⁻⁹ mbar
Material	Stainless Steel, Viton O-Ring
Viewport Material	Borosilicate Glass

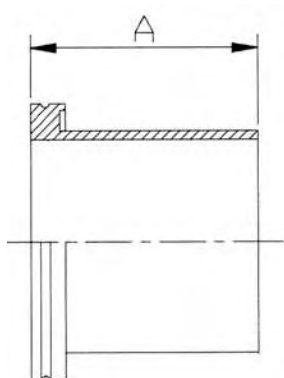


ISO-K Viton O-Ring Sealed Viewports Borosilicate Glass in Stainless Steel Holder

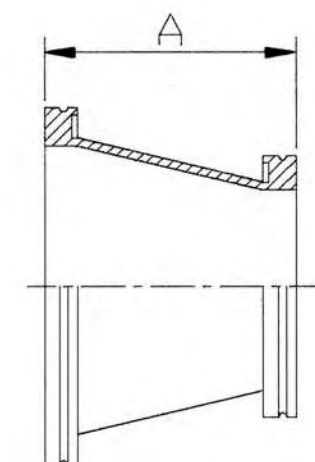
FLANGE	VIEW Ø	PART NUMBER	£
63 ISO-K	72	120-VPGO-ISO063	130.00
100 ISO-K	104	120-VPGO-ISO100	198.00
160 ISO-K	152	120-VPGO-ISO160	334.00
200 ISO-K	210	120-VPGO-ISO200	599.00



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	£
63 ISO-K	76/70	441-ISO063-TU	60.00
100 ISO-K	108/102	441-ISO100-TU	82.00
160 ISO-K	159/153	441-ISO160-TU	126.00
200 ISO-K	219/213	441-ISO200-TU	176.00
250 ISO-K	267/261	441-ISO250-TU	208.00
320 ISO-K	324/318	441-ISO320-TU	330.00
400 ISO-K	408/400	441-ISO400-TU	426.00
500 ISO-K	508/500	441-ISO500-TU	600.00
630 ISO-K	660/650	441-ISO630-TU	1,043.00

ISO-K Conical Reducer STAINLESS STEEL

FLANGE	LENGTH A	PART NUMBER	£
100/ 63 ISO-K	100 mm	441-ISO100-063-CR	156.00
160/100 ISO-K	120 mm	441-ISO160-100-CR	221.00
200/160 ISO-K	140 mm	441-ISO200-160-CR	343.00
250/200 ISO-K	160 mm	441-ISO250-200-CR	443.00

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 ⁻⁹ mbar
Material	Stainless Steel
Wall Thickness	3 mm (typical up to DN320)

ISO-K Straight Connector
STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER	£
63 ISO-K	100 mm	443-ISO063-X2	95.00
100 ISO-K	100 mm	443-ISO100-X2	139.00
160 ISO-K	100 mm	443-ISO160-X2	204.00
200 ISO-K	100 mm	443-ISO200-X2	300.00
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	£
63 ISO-K	88 mm	443-ISO063-L	111.00
100 ISO-K	108 mm	443-ISO100-L	172.00
160 ISO-K	138 mm	443-ISO160-L	360.00
200 ISO-K	178 mm	443-ISO200-L	486.00
250 ISO-K	208 mm	443-ISO250-L	669.00

Note: Larger sizes available to order

ISO-K Tee Piece
STAINLESS STEEL

FLANGE	LENGTH A	PART NUMBER	£
63 ISO-K	88 mm	443-ISO063-X3	248.00
100 ISO-K	108 mm	443-ISO100-X3	456.00
160 ISO-K	138 mm	443-ISO160-X3	652.00
200 ISO-K	178 mm	443-ISO200-X3	873.00
250 ISO-K	208 mm	443-ISO250-X3	POR

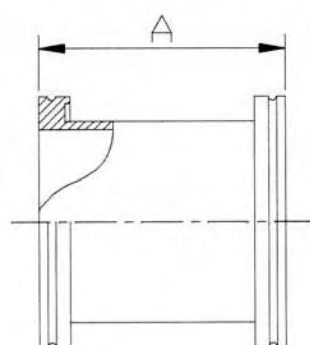
Note: Larger sizes available to order

ISO-K Reducing Tee Piece
STAINLESS STEEL

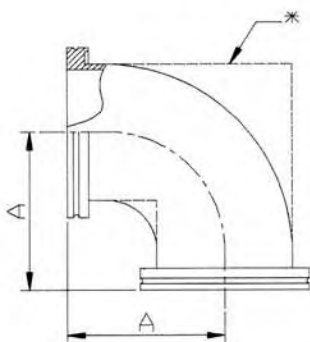
FLANGE	LENGTH A/B	PART NUMBER	£
100-63 ISO-K	216 / 100	443-ISO100-063-X3	247.00
160-100 ISO-K	276 / 130	443-ISO160-100-X3	456.00
200-160 ISO-K	356 / 160	443-ISO200-160-X3	652.00
250-200 ISO-K	416 / 190	443-ISO250-200-X3	873.00

Note: Other sizes on request

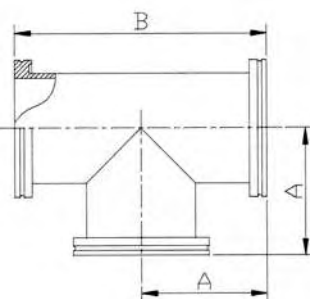
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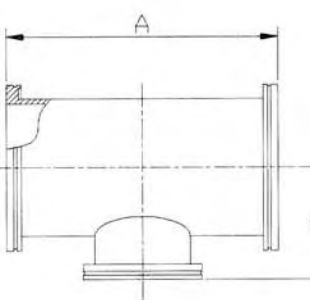
443-ISO063-X2 Straight Connector
For full dimensions,
please ask for ISO
Fittings data sheet



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

ISO-K 4 and 6 Way Crosses

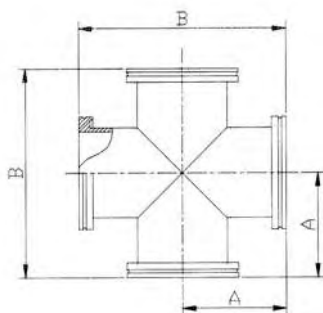
- 4 Way Crosses
- Spherical 4 Way Crosses
- 6 Way Crosses
- Spherical 6-Way Crosses

The Spherical Crosses have greatly increased work space in the centre.

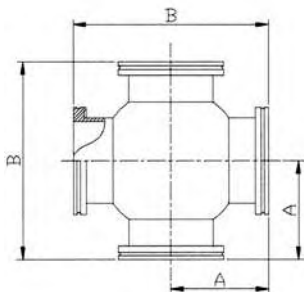
Special fittings including Reducing Crosses - Please call Sales Office

Specification Crosses

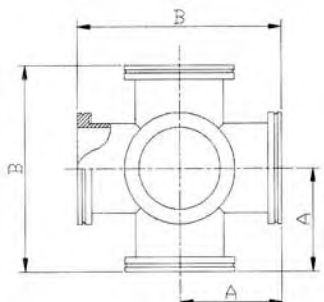
Vacuum	to 10 ⁻⁹ mbar
Material	Stainless Steel
Wall Thickness	3 mm (typical up to DN320)



443-ISO063-X4
Length B = 2x A

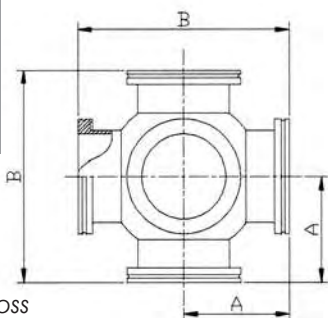


Spherical type 6-Way Cross with ISO-K Flanges.
For full dimensions, please ask for data sheet



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



ISO-K 4 Way Cross Standard Stainless Steel Tube Construction

FLANGE	LENGTH A	PART NUMBER	£
63 ISO-K	88 mm	443-ISO063-X4	391.00
100 ISO-K	108 mm	443-ISO100-X4	591.00
160 ISO-K	138 mm	443-ISO160-X4	956.00
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	£
63 ISO-K	88 mm	443-ISO063-X4S	417.00
100 ISO-K	108 mm	443-ISO100-X4S	660.00
160 ISO-K	138 mm	443-ISO160-X4S	1,043.00
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	£
63 ISO-K	88 mm	443-ISO063-X6	478.00
100 ISO-K	108 mm	443-ISO100-X6	826.00
160 ISO-K	138 mm	443-ISO160-X6	1,304.00
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

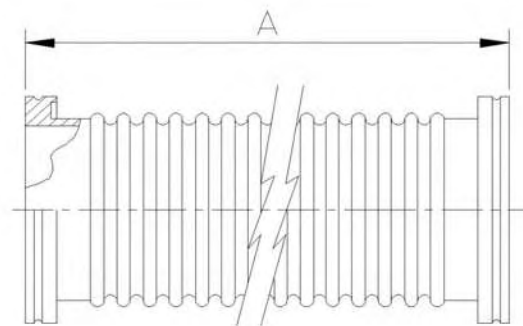
FLANGE	LENGTH A	PART NUMBER	£
63 ISO-K	88 mm	443-ISO063-X6S	608.00
100 ISO-K	108 mm	443-ISO100-X6S	921.00
160 ISO-K	138 mm	443-ISO160-X6S	1,434.00
200 ISO-K	178 mm	443-ISO200-X6S	POR
250 ISO-K	208 mm	443-ISO250-X6S	POR

Note: Larger sizes available to order

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 ⁻⁹ 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	£
63 ISO-K	500 mm	452-HOSE-ISO063-0500	POR
63 ISO-K	1000 mm	452-HOSE-ISO063-1000	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	£
63 ISO	5	441-ISO063-O	14.00
100 ISO	5	441-ISO100-O	14.00
160 ISO	5	441-ISO160-O	29.00
200 ISO	5	441-ISO200-O	43.00
250 ISO	5	441-ISO250-O	59.00
320 ISO	5	441-ISO320-O	78.00
400 ISO	5	441-ISO400-O	121.00
500 ISO	5	441-ISO500-O	143.00
630 ISO	5	441-ISO630-O	200.00

ADAPTORS AND SPECIAL HARDWARE



14.1: ADAPTORS CF TO OTHER TYPES

-> Page 148

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 149

Adaptors from KF to ISO-K
Adaptos KF to Swagelock



14.3 PRESSURE BURST DISCS

-> Page 150

Pressure Burst Discs- Stainless Steel



14.1 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

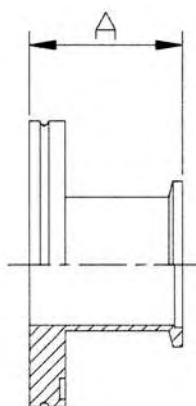
Between Series Adaptors are a useful and simple way of connecting components from different flange systems. Allectra offers Adaptors between all the combinations of the most common systems.

Custom adaptors for any flange type to any other are available to order. Standard overall lengths (A) are given. Other lengths upon request.



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	£
16CF	16KF	460-C16-K16	27.00
16CF	25KF	460-C16-K25	29.00
40CF	25KF	460-C40-K25	43.00
40CF	40KF	460-C40-K40	50.00
63CF	40KF	460-C63-K40	93.00
100CF	40KF	460-C100-K40	117.00

Note: Other flange combinations available on request

Adaptors from CF to ISO-K Stainless Steel A = 90mm

FLANGE 1	FLANGE 2	PART NUMBER	£
63CF	63 ISO-K	460-C63-ISO063	160.00
100CF	100 ISO-K	460-C100-ISO100	226.00
160CF	160 ISO-K	460-C160-ISO160	321.00
200CF	200 ISO-K	460-C200-ISO200	460.00

Note: Other flange combinations available on request

Adaptors from CF to female VCR Stainless Steel

FLANGE 1	VCR	PART NUMBER	£
16CF	1/8" (3.17mm)	460-C16-VCRF317	27.00
16CF	1/4" (6.35mm)	460-C16-VCRF635	27.00

Note: Other flange combinations available on request



Adaptors from CF to Pyrex and Quartz tube -
Please call Sales Office

Sub-D
1
CM + DIL
2
Coax
3
High Voltage
4
Thermo-
Couple
5
Cables
6
Accessories
7
Viewports
Fiber optic
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
Metal

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

Adaptors from KF to ISO-K Stainless Steel A = 40mm

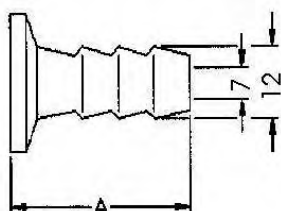
FLANGE 1	FLANGE 2	PART NUMBER	£
25KF	63 ISO-K	460-ISO063-K25	47.00
40KF	63 ISO-K	460-ISO063-K40	60.00
50KF	63 ISO-K	460-ISO063-K50	88.00
40KF	100 ISO-K	460-ISO100-K40	100.00
50KF	100 ISO-K	460-ISO100-K50	143.00

Note: Other flange combinations available on request

KF to Swagelock Adaptors STAINLESS STEEL

FLANGE	SWG SIZE	PART NUMBER	£
16KF	1/8" (3.17mm)	461-SWG317	27.00
16KF	1/4" (6.35mm)	461-SWG635	27.00
16KF	3/8" (9.52mm)	461-SWG952	27.00

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	£
16KF	40mm	461-HN12-K16	21.00
25KF	40mm	461-HN12-K25	21.00
40KF	40mm	461-HN12-K40	24.00

Pressure Burst Discs

Pressure Burst Discs are Flange mounted Membranes which are designed to rupture if the pressure in the Vacuum System exceeds 0.8bar above Atmospheric Pressure (0.8bar Gauge).

- Protect Viewports from reverse pressure
- Prevent damage caused by accidental overpressure
- Allow N₂ to escape if accidental release of LN occurs
- Available on 16CF or 40CF flanges and 16KF, 25KF or 40KF Flanges



Specification Burst Discs

Vacuum	UHV
Bursting pressure	0.8 to 1 bar over atmospheric
CF Flange	16CF or 40CF
KF Flange	16KF, 25KF and 40KF
Construction	All Metal
Height A from flange face to top	
	16CF, 16KF, 25KF: 48mm
	40CF, 40KF: 36mm
Ø of housing	45mm

Pressure Burst Disc CF Flange All Metal

FLANGE	A	PART NUMBER	£
16CF	48	461-PBD-C16	195.00
40CF	36	461-PBD-C40	195.00

Pressure Burst Disc KF Flanges All Metal

FLANGE	A	PART NUMBER	£
16KF	48	461-PBD-K16	191.00
25KF	48	461-PBD-K25	191.00
40KF	36	461-PBD-K40	191.00



Pressure Burst Discs with gas recovery can be built to order. Please ask Sales Office for details.

UHV AND HIGH VACUUM CHAMBERS



15.1 UHV AND HV CHAMBERS

-> Page 152

Stainless Steel UHV Chambers
 Stainless Steel HV Chambers
 Chamber Options



15.2 SPECIAL FABRICATIONS

-> Page 153

Special vacuum Fabrications
 Vacuum Equipment Assembly
 Non-magnetic Chamber
 Mu-metal Shields
 Mu-metal Chambers



15.3 STANDARD CHAMBERS

-> Page 154

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

UHV and High Vacuum Chambers

Allectra offers custom built chambers for UHV and HV systems

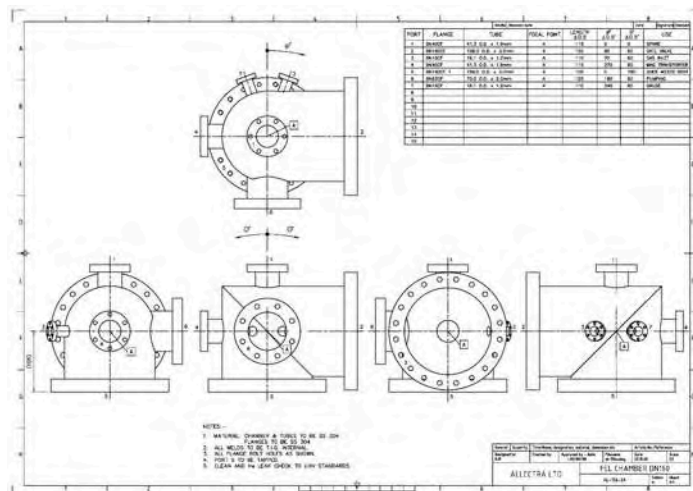
- Stainless Steel 316L or 304
- Standard design available
- Engineering drawings produced from customer's sketches or plans
- Chambers are cleaned to UHV standards using modern environmentally friendly processes



Spherical Chamber made from Stainless Steel Spinnings - typical application Surface Science

General Specification for SS Chamber

Vacuum	UHV 5×10^{-12} mbar HV 5×10^{-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



Allectra will produce detailed engineering drawings based on customer's sketches. 3D compatibility check is included.



A Special Purpose high dimensional accuracy chamber with Custom flanges



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_2 at atmospheric pressure
- Vacuum annealing

Send us your sketch for an initial 3D check and a quote.

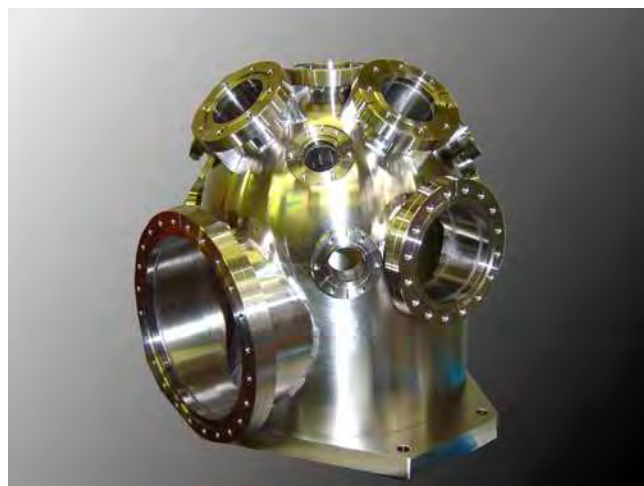
Special Vacuum Fabrications/ Vacuum Instrument Assembly/ Non-magnetic Chambers

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.

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 ⁻¹² 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 page 109)



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	£
63CF	63CF	640-LLC-63-63-VP	1,913.00
100CF	63CF	640-LLC-100-63-VP	2,000.00
100CF	100CF	640-LLC-100-100-VP	2,217.00
100CF	160CF	640-LLC-100-160-VP	2,478.00
160CF	160CF	640-LLC-160-160-VP	2,565.00

* 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 (page 143 - 144), 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	£
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.

ALUMINIUM CHAMBERS AND BI-METAL COMPONENTS



16.1 ALUMINIUM CHAMBERS

-> Page 156

Plate to Plate
Cylindrical
Formed
Machined
Extruded



16.2 ATLAS BI-METAL CF FLANGES

-> Page 157

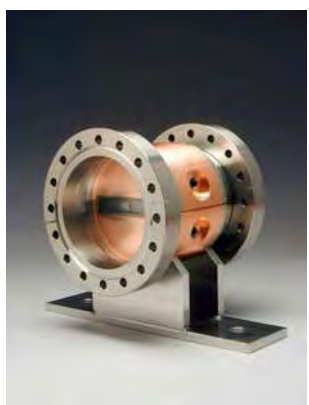
Fixed Bored Flanges with through holes
Fixed Bored Flanges - Tapped
Fixed Blank Flanges with through holes
Fixed blank Flanges - Tapped



16.3 ATLAS ATCR BI-METAL FACE SEAL TUBE FITTINGS

-> Page 158

Butt weld to Al tube
Socket weld to Al tube
Metal Gasket for ATCR
Male Nut for ATCR
Female Nut for ATCR



Aluminium Chambers

Both High Vacuum and UHV Chambers are offered in Aluminium. Al chambers have several distinct advantages over stainless steel:

- Light weight
- Design Flexibility, Al can be easily machined and formed by other processes such as extruding
- Non-magnetic
- Good thermal conductivity, Al can be baked at lower temperatures than Stainless Steel
- Good properties for radiation environments

High vacuum Al chambers can be fitted with ISO(K) and KF flanges for joining to standard High Vacuum components and pumps using conventional O-Rings.

UHV Al chambers can be fitted with CF Bi-metal flanges (see page 157) which allow coupling to standard CF components and pumps using conventional OFE copper gaskets.

Specification Aluminium Chambers

Vacuum UHV	5×10^{-12} mbar or
High Vacuum	5×10^{-9} mbar
Material	Aluminium alloys 5000 or 6000 series
Bake temperature	150°C typically
Construction	AC TIG welded
Cleaning	to UHV standard
Flanges:	Bi-metal CF, Al KF and ISO(K) or custom



Mirror Vessel
Aluminium chamber



Aluminium Monochromator Chamber

Types of Aluminium Chambers

Plate to Plate

Al Plate to Plate Chambers are constructed by welding together Al alloy plates. As Al plate is available in very large sizes, this method is especially suitable for large chambers.

Cylindrical

Readily available Al tube and pipe can be used to make Cylindrical Chambers in a variety of sizes.

Formed

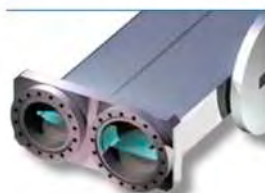
Hemispherical Spinings can be used to make Spherical Chambers or domed ends. Spun chambers can be very large if required.

Machined

The rapid machining properties of Al mean that manufacturing chambers from solid becomes an economical option even in larger sizes.

Extruded

Al extrusions are typically used for long beam chambers in, for example, Synchrotrons. In many cases Extruded Chambers are combined with Non-evaporable Getters to provide distributed pumping.



For advice on the suitability of Aluminium and further details of Al Vacuum Chambers, please contact the Sales Office.

Bi-Metal Flanges

The Atlas Bi-Metal Flange consists of a Stainless Steel front face with a conventional knife edge design bonded to an Aluminium back face or tube which can be welded to an Al chamber.

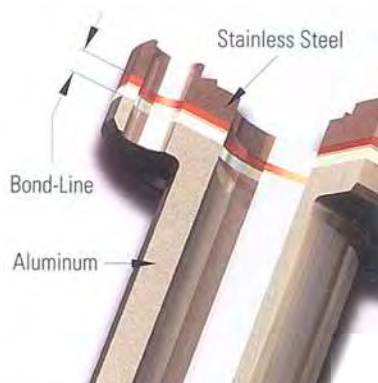
The bond is made with a patented process which employs interlayers of Titanium and Copper. The resulting bond is extremely strong and stable over a wide range of temperatures from Cryogenic to 400°C.

Aluminium is a very good UHV material with excellent out-gassing properties. It is finding increasing use in Synchrotrons and Semiconductor manufacturing plants amongst others. The Atlas Flange allows Aluminium chambers to be connected directly with conventional copper gaskets to Stainless Steel components such as pumps, gauges or valves. Atlas Bi-Metal Flanges are now in routine use at many Synchrotrons.

Specification Atlas Bi-Metal Flanges

Material	Stainless Steel 316L (1.4404)
Aluminium	6061-T6
Vacuum	UHV
Temperature	to 250°C
Welding	TIG or Electron Beam

Bi-Metal Flanges are made by explosion bonding Al to Stainless Steel with interlayers of Titanium and Copper (Atlas Technologies Inc. Patent Process).



Atlas Bi-Metal Weld Neck Flanges THROUGH HOLES FIXED (NON ROTATABLE) - BORED

FLANGE	TUBE OD	PART NUMBER	£
16CF	19 mm	420-CFBI-0133-02	POR
40CF	38.1 mm	420-CFBI-0275-02	POR
63CF	63.5 mm	420-CFBI-0450-02	POR
100CF	101.6 mm	420-CFBI-0600-02	POR
160CF	152.4 mm	420-CFBI-0800-02	POR

Atlas Bi-Metal Weld Neck Flanges TAPPED M4/M6/M8 FIXED (NON ROTATABLE) - BORED

FLANGE	TUBE OD	PART NUMBER	£
16CFT-M4	19 mm	420-CFBI-0133-22	POR
40CFT-M6	38.1 mm	420-CFBI-0275-22	POR
63CFT-M8	63.5 mm	420-CFBI-0450-22	POR
100CFT-M8	101.6 mm	420-CFBI-0600-22	POR
160CFT-M8	152.4 mm	420-CFBI-0800-22	POR

Atlas Bi-Metal Weld Neck Flanges THROUGH HOLES FIXED (NON ROTATABLE) - BLANK

FLANGE	TYPE	PART NUMBER	£
16CF	BLANK	420-CFBI-0133-05	POR
40CF	BLANK	420-CFBI-0275-05	POR
63CF	BLANK	420-CFBI-0450-05	POR
100CF	BLANK	420-CFBI-0600-05	POR
160CF	BLANK	420-CFBI-0800-05	POR

Atlas Bi-Metal Weld Neck Flanges TAPPED M4/M6/M8 FIXED (NON ROTATABLE) - BLANK

FLANGE	TUBE OD	PART NUMBER	£
16CFT-M4	BLANK	420-CFBI-0133-22	POR
40CFT-M6	BLANK	420-CFBI-0275-22	POR
63CFT-M8	BLANK	420-CFBI-0450-22	POR
100CFT-M8	BLANK	420-CFBI-0600-22	POR
160CFT-M8	BLANK	420-CFBI-0800-22	POR

For full dimensional details of Bi-metal CF flanges, please ask for the Atlas Flange data sheet.

ATLAS ATCR Bi-Metal Face Seal Tube Fittings

Bi-metallic face seal fittings use the patented Atlas AI to Stainless Steel seal. They enable AI pipe or tube to be connected to SS pipe using standard VCR fittings and gaskets.

Specification ATCR Fittings

Vacuum	UHV 5×10^{-12} mbar
Material	Aluminium/ Stainless Steel
Temp.	250°C max.

Butt weld face seal fitting for welding to Al chamber port



Socket weld Face Seal Fitting for Al Pipe

Copper Gasket for ATCR Fittings



Male Nut Stainless Steel



Female Nut - Stainless Steel



For full dimensional details of these fittings, please ask for ATCR data sheet.

Atlas Bi-metal Face Seal Tube Fittings
BUTT WELD TO AL TUBE

SIZE (ODmm)	ID mm	PART NUMBER	£
1/4" (8.9)	4.6	420-ATCRBI-BW5010	POR
3/8" (15.2)	8.0	420-ATCRBI-BW6010	POR
1/2" (15.2)	10.2	420-ATCRBI-BW7010	POR
3/4" (22.4)	15.7	420-ATCRBI-BW8010	POR
1" (25.4)	22.2	420-ATCRBI-BW9010	POR

Atlas Bi-metal Face Seal Tube Fittings
SOCKET WELD TO AL TUBE

SIZE(OD mm)	TUBE OD	PART NUMBER	£
1/4"(8.9)	6.5	420-ATCRBI-SW5030	POR
3/8"(15.2)	9.6	420-ATCRBI-SW6030	POR
1/2"(15.2)	12.8	420-ATCRBI-SW7030	POR
3/4"(22.4)	19.2	420-ATCRBI-SW8030	POR
1" (30.2)	25.5	420-ATCRBI-SW9030	POR

Atlas Bi-metal Face Seal Tube Fittings – Metal Gasket
COPPER (Ni or Al on request)

NOM. SIZE	TYPE	PART NUMBER	£
1/4" (6.35)	Cu	420-ATCRHW-5010-01	POR
3/8" (9.5)	Cu	420-ATCRHW-6010-01	POR
1/2" (12.7)	Cu	420-ATCRHW-7010-01	POR
3/4" (19.0)	Cu	420-ATCRHW-8010-01	POR
1" (25.4)	Cu	420-ATCRHW-9010-01	POR

Atlas Bi-metal Face Seal Tube Fittings
MALE NUT, Stainless Steel (Al on request)

NOM. SIZE	TYPE	PART NUMBER	£
1/4" (6.35)	MALE SS	420-ATCRHW-5010-04	POR
3/8" (9.5)	MALE SS	420-ATCRHW-6010-04	POR
1/2" (12.7)	MALE SS	420-ATCRHW-7010-04	POR
3/4" (19.0)	MALE SS	420-ATCRHW-8010-04	POR
1" (25.4)	MALE SS	420-ATCRHW-9010-04	POR

Atlas Bi-metal Face Seal Tube Fittings
FEMALE NUT, Stainless Steel (Al on request)

NOM. SIZE	TYPE	PART NUMBER	£
1/4" (6.35)	FEMALE SS	420-ATCRHW-5010-06	POR
3/8" (9.5)	FEMALE SS	420-ATCRHW-6010-06	POR
1/2" (12.7)	FEMALE SS	420-ATCRHW-7010-06	POR
3/4" (19.0)	FEMALE SS	420-ATCRHW-8010-06	POR
1" (25.0)	FEMALE SS	420-ATCRHW-9019-06	POR

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242	Coaxial 50 Ohm	3.2 / 3.3 / 3.4 / 3.5 / 3.8 / 3.9
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DE: Info@allectra.com
UK: uk@allectra.com
F: fr@allectra.com



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