2014

allectra

HIGH VACUUM AND UHV COMPONENTS

Company Profile

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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 Ofice 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 Vytek

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.

LATEST ADDITIONS TO THE PRODUCT RANGE

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

www.allectra.com

Individual inspection of every component before acceptance

Allectra – How to contact us

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

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Catalogue Version 2014-04

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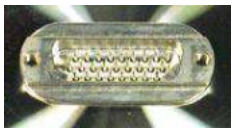




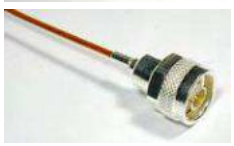





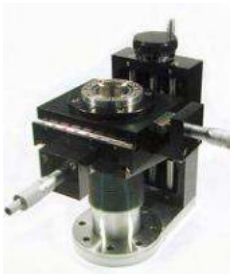

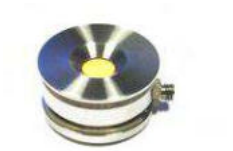

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Safety of Electrical Installations

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.

This catalogue is made with SCRIBUS, the Open-Source Desktop Publishing program.
Allectra wants to thank the community for the excellent work.

Technical Information, Flange Sizes

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

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

In addition to CF, KF and ISO-K/F we can offer flanges as well as components on the following flange types:
- JIS Standard (Size 10 to 300, mainly used in Asia)
- CeFix Flanges (EVAC registered design and trade mark)
- sTeRic 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.
Voltage ratings for vacuum components are valid for pressures $<1x10^{-3}$ mbar.

Conformance of Allectra Components

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

KF types are compatible with Klein Flange types and conform to ISO 1609.
ISO-K & ISO-F types are compatible with LF (Large Flange) types and conform to ISO 2861.

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Grades of Stainless Steel for UHV

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

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

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

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

Remarks for Weldable Feedthroughs

All weldable feedthroughs are tested for leak tightness. The welding requires care and experience, even with best practice some failures may occur. The warranty does not include failures caused by over-heating etc.
Allectra is happy to quote for ready made items, even on custom flanges.

Abbreviations used in this catalogue

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

Sub-D Feedthroughs, Connectors, Pins & Cables

SUB-D: System Overview -> Page 1.2

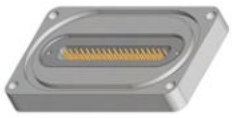
Sub-miniature Feedtrhoughs, Connectors, Cables
Different Types (Standard / High Density/ Power/Coax)

SUB-D: Standard Versions -> Page 1.4

Sub-miniature D type Feedthroughs, Connectors,
Pins, Housings

SUB-D: High Current Versions -> Page 1.8

Standard Density High Current Versions up to 10A



SUB-D: O-Ring sealded, Titanium Versions -> Page 1.12

Specialities and weldable versions

SUB-D: Connectors -> Page 1.14

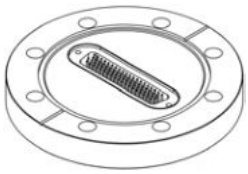
Connectors for High Vacuum and UHV, Air and Gender Changers

SUB-D: Pins -> Page 1.18

Pins for various size Cables, female and male

SUB-D: For Thermocouple Use -> Page 1.20

Multiple Feedthrough Flanges
CF, ISO-K and custom



HIGH DENSITY Sub-D -> Page 1.22

High Pin Density Sub-D, 26 /44 and 78 Pins
Feedthroughs, connectors, pins, housings

Mixed SUB-D with Power Pins -> Page 1.26

Combination Sub-D Feedthroughs with High Current pins
Feedthroughs, connectors, pins

Mixed SUB-D with Coaxial Pins -> Page 1.28

Combination Sub-D Feedthroughs with floating shield coaxial pins
Feedthroughs, connectors, pins

SUB-D: Ready made Cables -> Page 1.30

Sub-D cables for in-vacuum use, standard types

SUB-D: Tools -> Page 1.32

Crimp Tools for Sib-D pins

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The Subminiature-D System

The Subminiature-D connector system was developed in in 1952 by ITT Canon. The name comes from the D-Shape of the housing around the pin arrangement. It was the major connector for computer peripheral connections and is widly used for industrial applications.

There are several variations available:

- The ***Standard Design*** with 9 / 15 / 25 / 37 / 50 Pins (pages 1.4- 1.7)
  These sizes also define the shell sizes A (15-pin) to E (9-pin) for the other versions. As the name system is not straight forward, Allectra uses the number of pins to define the shell sizes. (pages 1.4 - 1.7)

- As a unique product, Allectra offers a ***High current version of the Standard design***. These versions allow a continuous current on all pins of 6A, for short periods up to 10A are possible (pages 1.8 - 1.11)

- ***High Density*** versions: More pins in the same shell size with reduced pin diameter, from 15 to 78 pins (pages 1.22 - 1.25)

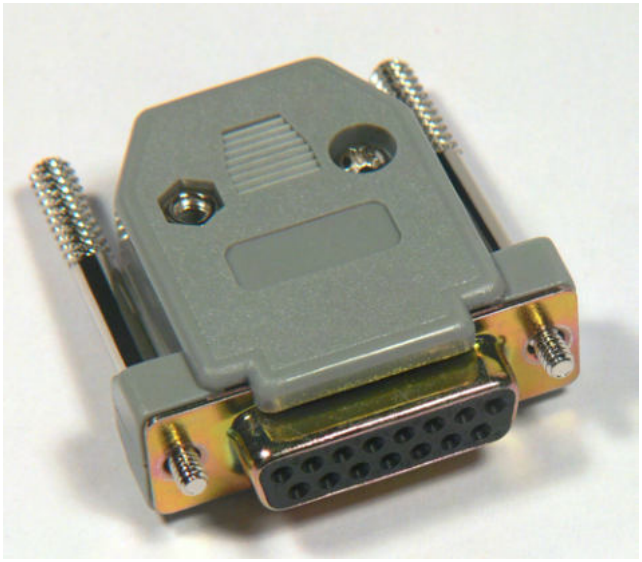
-***Mixed Sub-D*** with high power pins (page 1.26) or with coaxial pins (page 1.28).
  High power pins allow up to 20A per Pin.
  Coaxial pins are floating shield versions, they are cost effective alternatives for applications, where 50 Ohm impedance is not required.

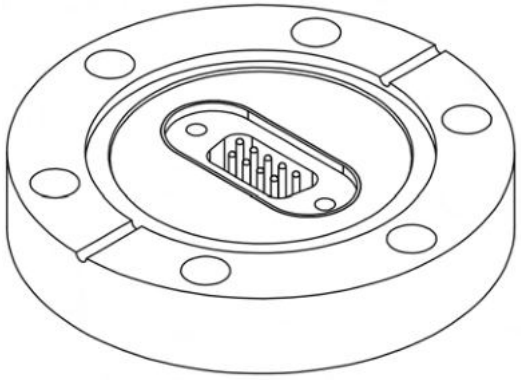
- Special ***non-magnetic*** and ***Titanium*** versions are available as well (page 1.13)

Allectra offers a full range of components:
- Air side connectors with housings
- feedthroughs
- vacuum side connectors
- various pins
- housings
- ready made cables

Sub-D connectors are internationally standardized by DIN 41652, MIL-C-24308 and IEC807-2.

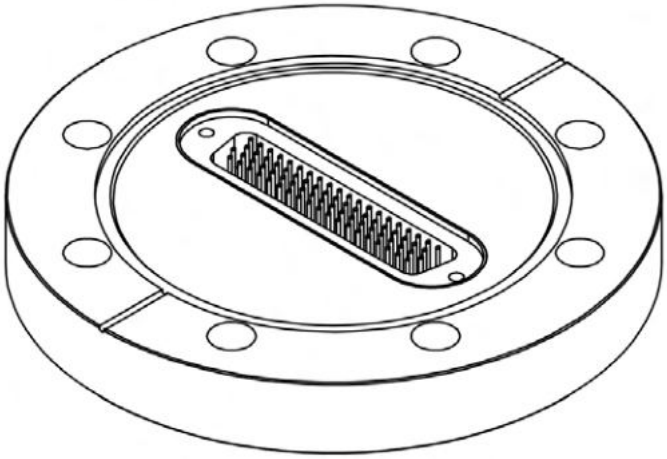
Version	Nr. of pins	Current (continuos)
Standard	9 to 50	3A
High current	9 to 50	6A
High Density	26 to 78	2A
Mixed Power	2 to 5	20A
Mixed Coax	2 to 5	2A coaxial floating





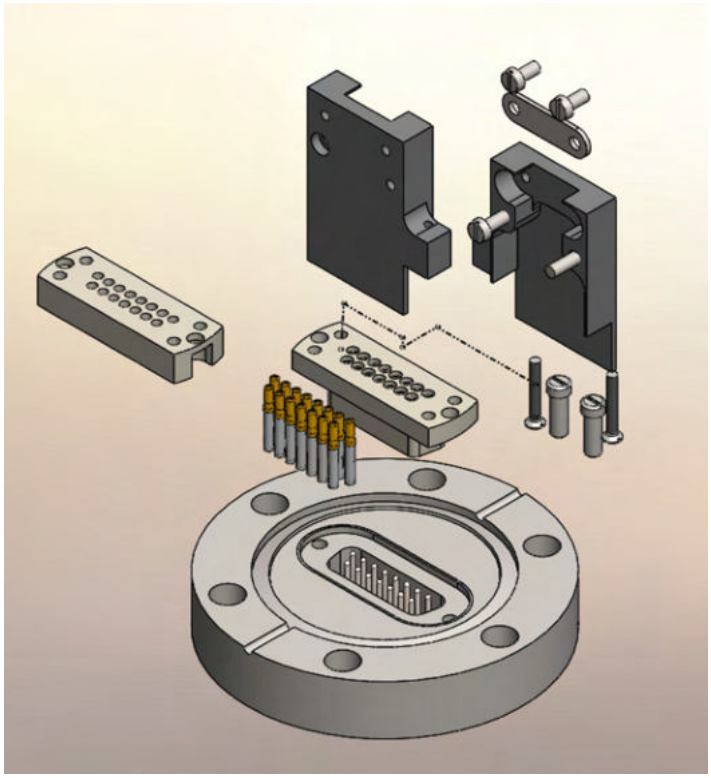
TOP: The smallest feedthrough, mounted on a CF40 flange.

BOTTOM: A High Density 78 pin version on a 63CF flange



Useable connectors: On the air side, all standard connectors can be used. The only limitation we know are exotic housing designs.
On the vacuum side, the use of High Vacuum or Ultra High Vacuum connectors supplied from Allectra is assumed.
High Density connectors with 15*), 26, 44 and 68*) pins have a different pin layout on air and vacuum side. So here the air side connectors cannot be used on the vacuum side.

*) not yet offered



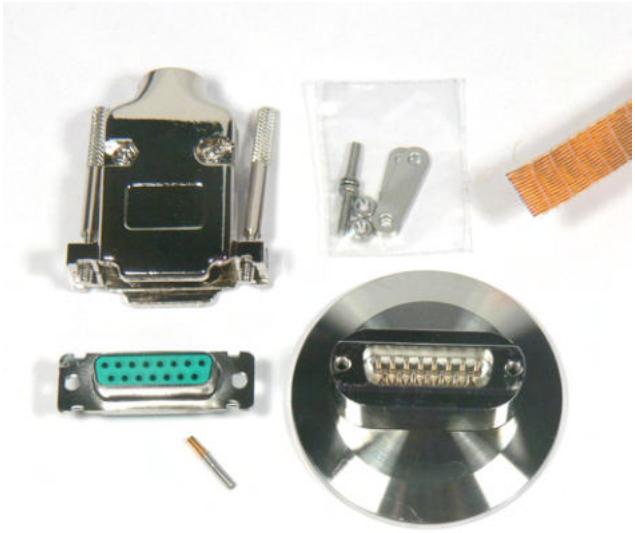
All components for the vacuum side:

- *Flange with feedthrough*
- *Crimp pins*
- *UHV compatible connector (front and back part)*
- *Screws for connector assembly and fixation to flange*
- *Housing with strain relief*

Cables and air side connector are not shown

General Specifications for Sub-D

Pin-ø	1.0mm Standard, 0,7mm High density 3.6mm Mixed Power
Leak rate	$<5x10^{-10}$ mbar-l/s He (for HV and UHV versions)
Temperature	-200°C to 250°C
Pins	Gold plated
Seal	Glass Ceramic
Test Voltage	500V DC Pin to Ground
Max. Current	from 3A (HD versions) to 20A (Mixed Power versions)



High Vacuum components:

- *KF40 Flange with 15-pin feedthrough*
- *Crimp pin*
- *HV compatible connector*
- *Housing with strain relief*
- *Ribbon cable with 15 wires*

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Sub-miniature D Type Feedthroughs on CF Flanges

9 to 50 Pin Standard versions, 40CF to 100CF

- 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 available

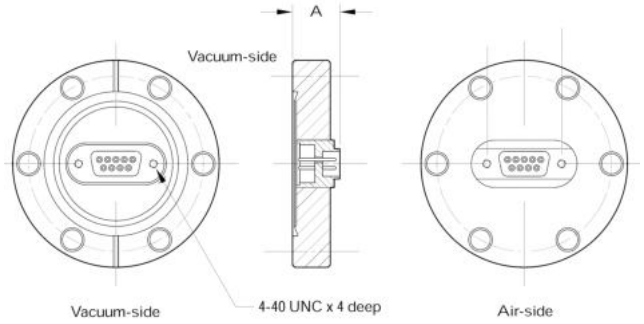
General Specifications Sub-Miniature D

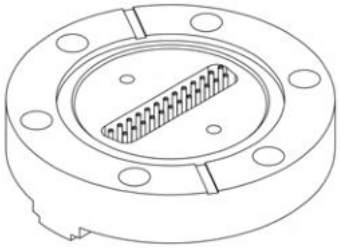
Compliance	DIN 41652, MIL-C-24308
Pin-ø	1.0mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel 316L
Test Voltage	500V DC
Maximum Current	5A per pin
Cont. Current	3A per pin, all pins loaded
Temp.	-200°C to 250°C
Leak rate	<5x10^{-10} mar-l/s He

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

SIZE	NO. OF PINS	PART NUMBER
40CF	9	210-D09-C40
40CF	15	210-D15-C40
40CF	25*	210-D25-C40
63CF	15	210-D15-C63
63CF	25	210-D25-C63
63CF	50	210-D50-C63
100CF	37	210-D37-C100
100CF	50	210-D50-C100

* uses special socket connector on vacuum side- page 1.15

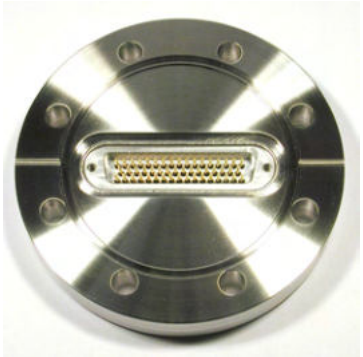




210-D25-C40, please note the special design of this type. The hole - to - feedthrough orientation is diffent.

For the vacuum side a custom build connector is offered.

For up to 10A and a continuous use of up to 6A per pin, please have a look at the high current versions on page 1.8!



210-D50-C63, 50 Pins on a DN63 flange

We offer a comprehensive range including unique products:
- 9, 15 and 25 Pins on 40CF
- 50 Pins on 63CF
- 9 Pins on 25KF / 25 Pins on 50KF
- High Density versions with 26, 44 and 78 pins

Sub-miniature D Type Feedthroughs on CF Flanges

Multiple feedthroughs on one flange

Allectra offers multiple Sub-D feedthroughs, mounted on one flange. Some items are standard products, but with our in house manufacturing, we can offer designs according your wishes fast and to competitive prices.

Allectra offers flanges with multiple feedthroughs! Not all possible combinations can be listed here! Please ask for a quote.
Various types of feedthroughs can be mixed on one flange, for example, Sub-D + coaxial types. Zero length flange adapters with feedthroughs are possible etc. etc.

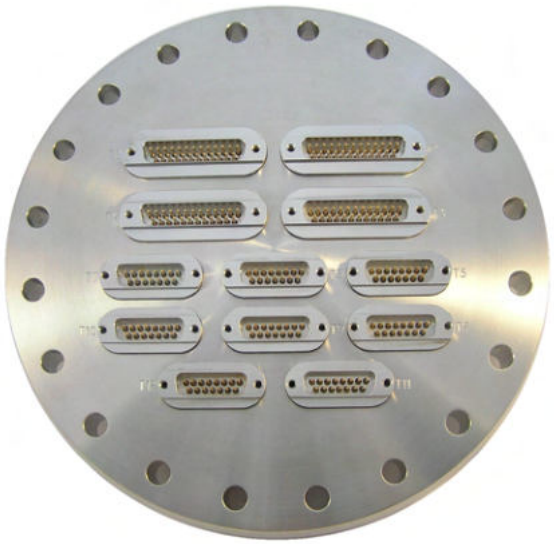
Size	D09	D15	D25	D37	D50
CF40	1	1	1	---	---
CF63	4	3	2	1*	1
CF100	8	8	5	2	2

List of how many feedthroughs of one shell size will fit to a given flange size.
**) Sub-D 37 on CF63 fits, but an extended tube size is required to give enough space for the connector.*

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

SIZE	NO. OF PINS	PART NUMBER
63CF	2x D09	210-D09-C63-2
63CF	2x D15	210-D15-C63-2
63CF	2x D25	210-D25-C63-2
63CF	3x D09	210-D09-C63-3
63CF	3x D15	210-D15-C63-3
Examples for versions on 100CF:		
100CF	2x D37	210-D37-C100-2
100CF	2x D50	210-D50-C100-2

other combinations on request, please contact sales office



Some examples of custom made arrangements.
Top: Multiple Sub-D on a 160CF flange
Right Top: 4x 9-pin Sub-D on a flange
Right Bottom: Combination with Coaxial feedthroughs on a 63CF flange

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Sub-miniature D type Feedthroughs on KF and ISO-K Flanges, 9 to 50 Pin

- Versions mounted on KF and ISO-K flanges
- Special types available:
  -9 pins on a 25KF flange
  -25 pins on 50KF

(For these versions vacuum side connectors without the mounting screws are required (see page 1.8, 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

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

SIZE	NO. OF PINS	PART NUMBER
25KF	9*	210-D09-K25
40KF	9	210-D09-K40
40KF	15**	210-D15-K40
50KF	15	210-D15-K50
50KF	25*	210-D25-K50
63ISO-K	25	210-D25-ISO63
63ISO-K	50**	210-D50-ISO63
100ISO-K	37	210-D37-ISO100
100ISO-K	50	210-D50-ISO100

* uses small "SX"-type socket connector - page 1.16

** uses small "S"-type socket connector - page 1.16

Components of a complete system:

- feedthrough	*210-D15-K40*
- connector	*211-FS15-HV*
- pins	*212-PINF*
- housing with strain relief	*211-HSG-D15-SR*
- ribbon cable	*311-KAPM-035-RIB15*

Special compact version: 9 pins on a KF25 flange (210-D09-K25)

This type requires the "SX" connector on the vacuum side (211-FS09-SX) - see page 1.16

Allectra offers flanges with multiple feedthroughs! Not all possible combinations can be listed here! Please ask for a quote.
Various types of feedthroughs can be mixed on one flange. The picture on the right shows a custom made arrangement on a rightangular, O-ring sealed flange.

Multiple Sub-D Feedthroughs on KF/ ISO-K and custom Flanges, 9 to 50 Pin

Standard combination flanges with 2 or 3 feedthroughs are available on short delivery or even ex stock. More complex combinations are done in our own workshop according your requirements.

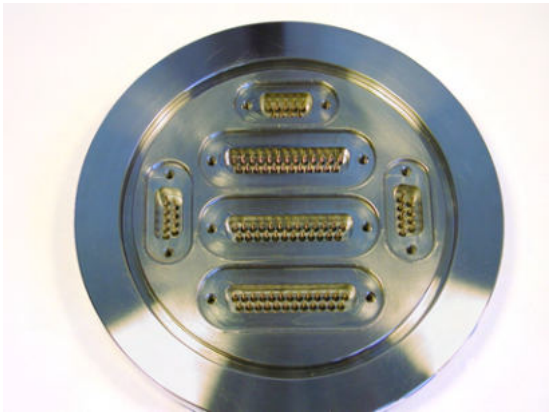
General Specifications Sub-Miniature D

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

Multiple Sub-D F/T's on KF Flanges 500V, up to 5 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
50KF	2x9	210-D09-K50-2
50KF	2x15	210-D15-K50-2
63KF	3x15	210S-D15/3-K63

Please note: KF63 flanges are similar to the other KF flanges and use a chain clamp for closing. For more details, please contact our offices.



Some examples of special assemblies. Please note, that on special assemblies, also the high current versions or the High Density versions can be used!

Multiple Sub-D F/T's on ISO-K Flanges 500V, up to 5 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
63ISO-K	2x9	210-D09-ISO63-2
63ISO-K	2x15	210-D15-ISO63-2
63ISO-K	2x25	210-D25-ISO63-2
100ISO-K	2x37	210-D37-ISO100-2
100ISO-K	2x50	210-D50-ISO100-2
63ISO-K	3x9	210-D09-ISO63-3
63ISO-K	3x15	210-D15-ISO63-3
100ISO-K	3x25	210-D25-ISO100-3

For other combinations, please ask for a quote

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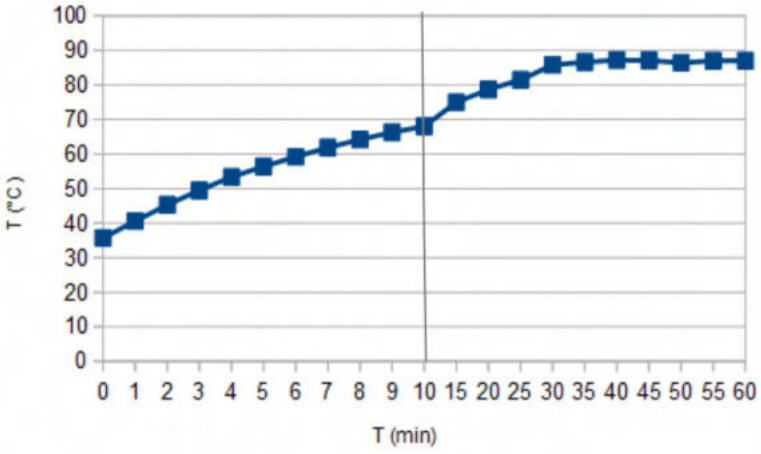
High Current Sub-D feedthroughs on CF and KF /ISO Flanges

The typical use of Sub-D feedthroughs are signal connections and low current applications.
With the HIGH CURRENT versions, Sub-D feedthroughs can replace power feedthroughs with minimal space requriements.

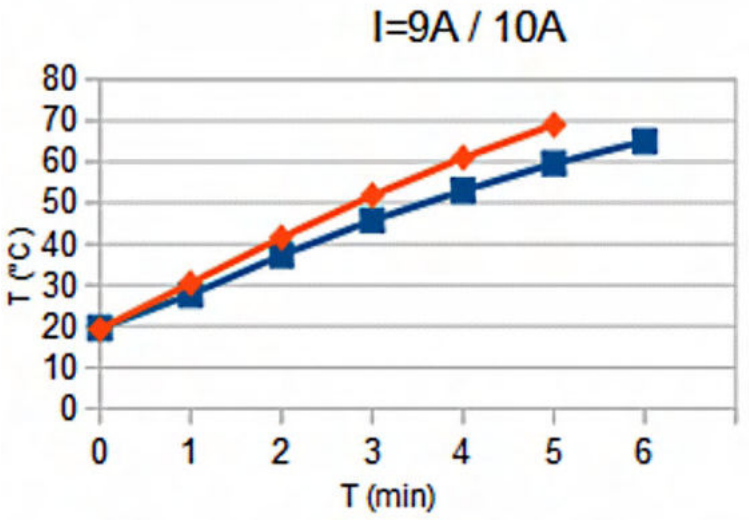
HC Sub-D feedtrhoughs allow:
- Continuous use with 6A, all pins loaded
- Short time use with 10A, all pins loaded

All dimensions are identical to Standard Sub-D types!
Allectra offers the full range (9 to 50 pins).

Pleases note, that also the cables and connectors must be choosen, who can handle the high current. Allectra offers all required components:
- Crimp pins for thicker wires
- UHV compatible wire
- Air side connectors with high current rating



*Temperature measured on a 25-pin Sub-D HC f/t at **7A** versus time (=1A more than specified, all pins loaded, so 175A in total).*
The max. reached temperature stays below 90°C.



Temperature versus time with 9 A (blue) and 10A (red) current per pin, all pins loaded. (225 / 250A in total)
All tests were done at room temperature of ~20°C

High Current Sub-D feedthroughs on CF and KF /ISO Flanges

The versions with one HIGH CURRENT (HC) feedthough per flange are offered here.
Please ask for a quote, if you require more feedthroughs on one flange or if combinations with other types of feedthroughs are desired.

General Specifications High Current Sub-D

Compliance	DIN 41652, MIL-C-24308
Pin-ø	1.0 mm
Pin material	Gold plated propriatary metal
Seal	Glass Ceramic
Flange	Stainless Steel
Test Voltage	500V DC
Maximum Current	10A per pin for 5 min.
Cont. Current	6A per pin, all pins loaded
Temperature	-200°C to 250°C (UHV)
	-40°C to 200°C (HV)
Leak rate	$<5x10^{-10}$ mbar-l/s He (UHV)
	$<1x10^{-9}$ mbar-l/s He (HV)

Sub-D Feedthroughs on CF Flanges 500V, up to 10 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
40CF	9	210-D09-C40-HC
40CF	15	210-D15-C40-HC
63CF	15	210-D15-C63-HC
63CF	25	210-D25-C63-HC
63CF	50	210-D50-C63-HC
100CF	37	210-D37-C100-HC
100CF	50	210-D50-C100-HC

Not listed in the cataloge are flanges with multiple High Current Sub-D feedthroughs.

Please ask for a quote, we can do all kind of assemblies wiht High Current versions as well!

Sub-D Feedthroughs on KF/ISO-K Flanges 500V, up to 10 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
40KF	9	210-D09-K40-HC
40KF	15	210-D15-K40-HC
63ISO-K	15	210-D15-ISO63-HC
63ISO-K	25	210-D25-ISO63-HC
63ISO-K	50	210-D50-ISO63-HC
100ISO-K	37	210-D37-ISO100-HC
100ISO-K	50	210-D50-ISO100-HC

Please note:

To use the feedthrough with high current, also the **connectors, pins and cables** must be adjusted for the use with high current.
For the vacuum side the housings are identical to the standard versions, but we recommend the use of a cable with 1.3mm diameter and the fitting crimp pins (see next page)
For the air side, fitting high current connectors are offered as well on next page,

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Accessories for HC Sub-D feedthroughs

All components used wiith HC feedthroughs must be choosen for high current use. Here the fitting components are listed.

Please note, that the vacuum side connectors and housings are identical with the Standard Sub-D versions, only the pins have to be changed. These connectors and housings are listed on page 1.14 to 1.16

HC air side connectors have gold plated contacts. They come including a plastic housing with thumb screws

Specification HIGH CURRENT CRIMP PINS

Vacuum	High Vacuum and UHV
Material	Gold plated copper alloy
Pin diameter	1mm ø
Wire size	0.7 to 1.3mm ø max
Crimp tool	214-CTOOL-SUB-D
	214-CTOOL
	214-CTOOL-HQ

High Current Crimp Pins for Sub-D
Cable ø 1.3mm max, fits HV and UHV Sockets

TYPE/WIRE Ø	No. PER PKT.	PART NUMBER
female, 1.3mm ø	10	212-PINF-10-HC
female, 1.3mm ø	15	212-PINF-15-HC
female, 1.3mm ø	25	212-PINF-25-HC
male, 1.3mm ø	10	212-PINM-10-HC
male, 1.3mm ø	15	212-PINM-15-HC
male, 1.3mm ø	25	212-PINM-25-HC

Specification HIGH CURRENT AIR SIDE CONNECTORS

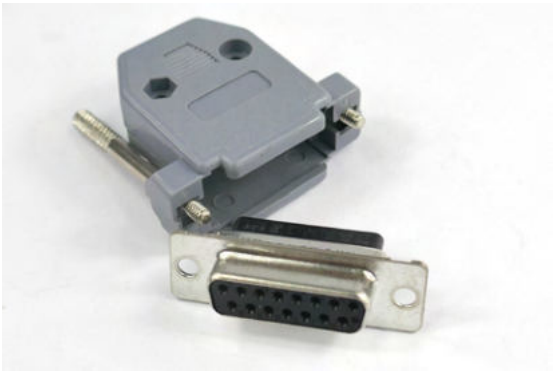
Pin diameter	1mm ø
Surface	fully Gold plated
Pins	Solder cup
Wire diameter	1.0mm ø max
Rated current	7.5A continuous

Air side connectors, solder pins
for up to 7.5A continuous current

TYPE	PINS	PART NUMBER
AIR, 7.5A	9	211-FS09-AIR-HC
AIR, 7.5A	15	211-FS15-AIR-HC
AIR, 7.5A	25	211-FS25-AIR-HC
AIR, 7.5A	37	211-FS37-AIR-HC
AIR, 7.5A	50	211-FS50-AIR-HC

Standard connectors are rated to 5A max. These special connectors can be used at up to 7.5A per pin continuously. Please note, that the typical ready made air side cables are only useable for approx. 1A!

Air side connectors have gold plated solder cup pins for 1mm ø wires.
If you want to use thicker wires up to 1.3mm ø, use above listed crimp pins plus the Crimp pin housings 211-FSxx-ATC, see page 1.20



Accessories for HC Sub-D feedthroughs

All components used wiith HC feedthroughs must be choosen for high current use. Here the fitting components are listed.

Please note, that the vacuum side connectors and housings are identical with the Standard Sub-D versions, only the pins have to be changed. Connectors are listed on page 1.14-1.15
Housings are listed on page 1.14 and 1.16

Specification HIGH CURRENT WIRE

Vacuum	UHV, <10^{-10} mbar
Construction	High flexible 1.3mm ø (19x0.25mm)
Material	Silver plated copper
Insulation	Kapton
Overall diameter	1.4mm
Temp. range	4K .... 300°C
Radiation	up to 10^9 rad

The HC pins allow the use of cable up to 1.3mm diameter with the Sub-D system. The pins fit to all standard connectors.
The cable 311-KAPM-130-RAD can be used for more than 10A and is so the ideal wire for the High Current Sub-D system (top left cable on the photo).

Pins and cables can be used with the standard feedthroughs as well!

For a full range of cables, see Sec. 6

UHV compatible Wire, Kapton insulated 1.3mm ø, radiaton resistant

LENGTH	PART NUMBER
5m	311-KAPM-130-RAD-5M
10m	311-KAPM-130-RAD-10M
50m	311-KAPM-130-RAD-50M

Male pins for the different cable sizes. On the right, the High Current pins are shown, which accept cables up to 1.3mm diameter

The "HC" Logo on the feedthrough clearly marks the types for high current applications. Of course they can be used with standard pins as well!

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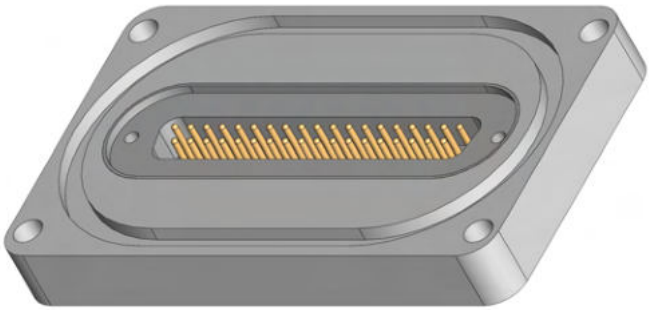
O-ring sealed Sub-D feedthroughs for High vacuum applications

For applications down to 10-7 mbar, Allectra offers a special series of O-ring sealed Sub-D feedthroughs.
Depending on the application, either the compact version or a version on a rightangular plate can be used.
As the standard rightangular plate has the same size for all types, feedthroughs can easily be exchanged.
We can also mount other feedthrooughs (e.g. coacial types) on the same plate size!

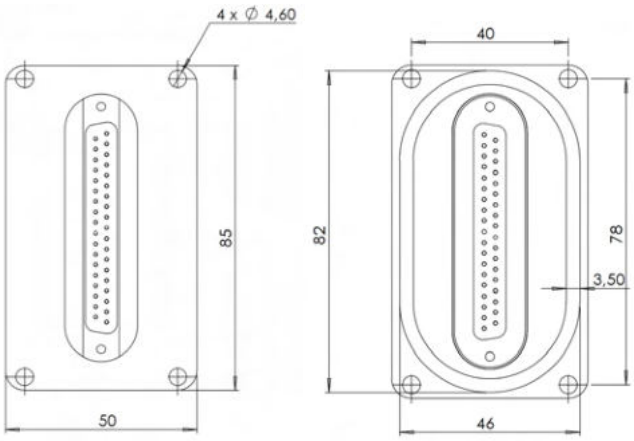


General Specifications Baseplate Sub-D

Baseplate Size	85 x 50 mm
Baseplate material	SS 1.4301
Pin-ø	1.0 mm
Pin material	Gold plated propriatary metal
Seal	Glass Ceramic
O-Ring	FKM (Viton) 3mm included
Test Voltage	500V DC
Max. Current	5A /10A per pin depending on type
Cont. Current	3A / 6A per pin, all pins loaded
Temp.	-40°C to 200°C (HV)
Leak rate	<1x10^{-9} mbar-l/s He (HV)

Standard Base Plate with Sub-D feedthroughs (3A)

TYPE	PINS	PART NUMBER
	1x9	215-BP-D09
	1x15	215-BP-D15
	1x25	215-BP-D25
	1x37	215-BP-D37
	1x50	215-BP-D50



HC

Standard Base Plate with High Current Sub-D feedthroughs (6A)

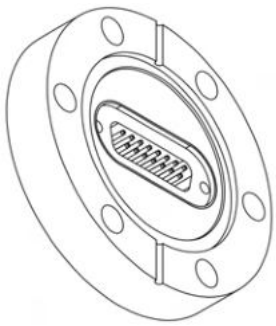
TYPE	PINS	PART NUMBER
	1x9	215-BP-D09-HC
	1x15	215-BP-D15-HC
	1x25	215-BP-D25-HC
	1x37	215-BP-D37-HC
	1x50	215-BP-D50-HC

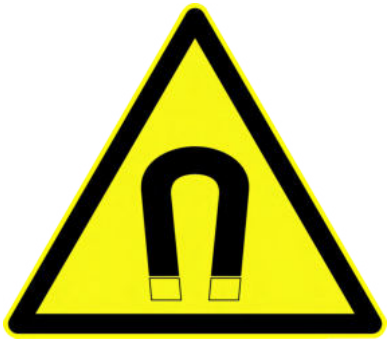
The widely used 15 pin Sub-D feedthroughs are also available in a screw type version for custom High Vacuum applications. Please ask the sales office for details

Non-Magnetic Sub-D feedthroughs:

Special SS and Titanium Versions

Standard Sub-D feedthroughs are slighty magnetic. If this is an issue, Allectra offers versions with a permeability μ<1.008 in 316LN flanges.
For demanding applications, Allectra offers in addition Sub-D feedthrougs including flanges made out of Titanium.





General Specifications Non-Magneitc Sub-D

Magn. permeability	μ <1.008
Pins	WCu (non-magnetic)
Housing	Stainless Steel (special alloy) with good weldability

Sub-D Feedthrough on CF flanges Non-Magnetic on 316LN Flanges

SIZE	NO. OF PINS	PART NUMBER
40CF	9	210-D09-C40-NM
40CF	15	210-D15-C40-NM
63CF	25	210-D25-C63-NM
63CF	50	210-D50-C63-NM

Allectra can offer multiple non-magnetic feedthroughs on 316LN flanges.
Please ask for a quote!

General Specifications Titanium Sub-D

Flange and Housing	Titanium
Pins	Tantalum

Sub-D Feedthrough on CF40 flange Titanium Flange

SIZE	NO. OF PINS	PART NUMBER
40CF-TI	9	210-D09-C40-TI
40CF-TI	15	210-D15-C40-TI
63CF-TI	25	210-D25-C63-TI

Please ask for a quote for other assemblies

Sub-D weldable versions

For customers, who prefer welding in house, Allectra offers all sizes of Sub-D feedthroughs also as weldables, suitable for TIG or laser welding.

Allectra is happy to quote speicals against your requirements. We will quote against your description, sketch or drawing.

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

General Specifications Weldable Sub-D

Height	17 mm
Slit	180° Radius on both sides
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 WELDABLES 500V, up to 5 Amps per Pin

NO. OF PIN	SLIT SIZE (mm)	PART NUMBER
9	14.5x33	218-D09-SS
15	16.5x38	218-D15-SS
25	19x55	218-D25-SS
37	19x70	218-D37-SS
50	19x68	218-D50-SS
non-magnetic versions on request		
9 High Current	14.5x33	218-D09-SS-HC
15 High Current	16.5x38	218-D15-SS-HC
25 High Current	19x55	218-D25-SS-HC
37 High Current	19x70	218-D37-SS-HC
50 High Current	19x68	218-D50-SS-HC

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UHV Plugs and Sockets in PEEK

Allectra offers Female Connectors (Sockets) which fit to Feedthroughs as well as Male Connectors (Plugs) for in-vacuum coupling.
On this page, the PEEK connectors for use up to 230°C are listed.
Ceramic connectors see right hand page!

Please order Pins separately, see page 1.16 ff. for range.
HV versions and air side connectors are listed on page 1.10

Specification PEEK Sub-D Connectors

Type	Sub-D Connectors for in-vacuum use
Vacuum	High Vacuum(HV) 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 female	212-PINF, -PINF-B. -PINF-S, -PINF-HC, or thermocoulple pins
Use Pins male	212-PINM, -PINM-S, -PINF-HC or thermocouple pins

UHV PEEK Sockets
Female PEEK Sockets to fit Feedthroughs

VACUUM	No. OF POLES	PART NUMBER
HV/UHV	9	211-FS09-PK
HV/UHV	15	211-FS15-PK
HV/UHV	25	211-FS25-PK
HV/UHV	25	211-FS25-PK-S*
HV/UHV	37	211-FS37-PK
HV/UHV	50	211-FS50-PK

* 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
HV/UHV	15	211-MS15-PK
HV/UHV	25	211-MS25-PK
HV/UHV	37	211-MS37-PK
HV/UHV	50	211-MS50-PK

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.

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

VACUUM	No. OF POLES	PART NUMBER
HV/UHV	9	211-HSG-D09-UHV
HV/UHV	15	211-HSG-D15-UHV
HV/UHV	25	211-HSG-D25-UHV
HV/UHV	37	211-HSG-D37-UHV
HV/UHV	50	211-HSG-D50-UHV

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

PEEK connector with housing

-Open (top and bottom shell visible)
- Assembled

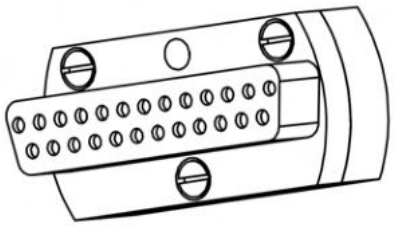
UHV Plugs and Sockets in Ceramic

For lowest possible outgassing, connectors made out of ceramic are the best choice. Ceramic does not absorb any water in the volume; in addition, they can be used from cryo temperatures up to 300°C

Please order Pins separately, see page 1.16 ff. for range or add "-PACK" at the end of the part code to get the standard pins with the connector (see below)

Specification Ceramic UHV Sub-D Connectors

Type	Sub-D Connectors for in-vacuum use
Vacuum	UHV 10^{-10} mbar and below
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 female	212-PINF, -PINF-B. -PINF-S, -PINF-HC, or thermocoulple pins
Use Pins male	212-PINM, -PINM-S, -PINF-HC or thermocouple pins



Special 25-pin connector 211-FS25-UHV-S for 25 pin feedthrough on 40CF flange

UHV Ceramic Sockets
Female Ceramic Sockets to fit Feedthroughs

VACUUM	No. OF POLES	PART NUMBER
UHV	9	211-FS09-UHV
UHV	15	211-FS15-UHV
UHV	25	211-FS25-UHV
UHV	25	211-FS25-UHV-S*
UHV	37	211-FS37-UHV
UHV	50	211-FS50-UHV

* 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
UHV	15	211-MS15-UHV
UHV	25	211-MS25-UHV
UHV	37	211-MS37-UHV
UHV	50	211-MS50-UHV

WHY ARE THE CRIMP PINS NOT INCLUDED?

Allectra offers a selection of pins for various cable diameters, the best fitting size shoulld be choosen according the desired cable.
Nevertheless, you can add: **"-PACK"** at the end of the part code to get the required number of our most common pins Type 212-PINF (female) or 212-PIN-M (male) with the connector!
Example: 211-FS15-PK-PACK: Peek connector including 15 off female pins.

The price is the sum of the connector plus the pin pack.
See Page 1.18 for specification of the crimp pins

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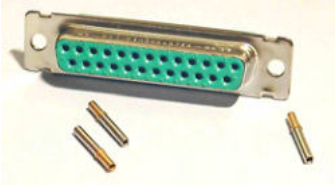
High Vacuum Plugs and Sockets

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 page 1.9



General Specification HV Sub-D Connectors

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

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

VACUUM	NO. OF POLES	PART NUMBER
HV	9	211-FS09-HV
HV	9	211-FS09-HV-SX
HV	15	211-FS15-HV
HV	15	211-FS15-HV-S
HV	25	211-FS25-HV
HV	25	211-FS25-HV-SX
HV	37	211-FS37-HV
HV	37	211-FS37-HV-SX
HV	50	211-FS50-HV
HV	50	211-FS50-HV-S

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

Right: small "-S" version with rounded edges
Left: extra small "-SX" version without screw holes

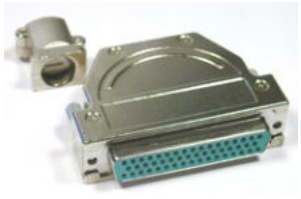
High Vacuum Plugs for Sub-D MALE Plugs to fit female Sockets

VACUUM	NO. OF POLES	PART NUMBER
HV	9	211-MS09-HV
HV	15	211-MS15-HV
HV	25	211-MS25-HV
HV	37	211-MS37-HV
HV	50	211-MS50-HV

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

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

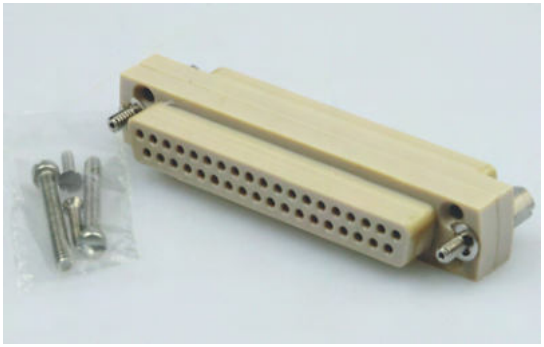
VACUUM	NO. OF POLES	PART NUMBER
HV	9	211-HSG-D09-SR
HV	15	211-HSG-D15-SR
HV	25	211-HSG-D25-SR
HV	37	211-HSG-D37-SR
HV	50	211-HSG-D50-SR



Gender Changer for Sub-D, Air and UHV

Sub-D feedthroughs are on air and vacuum side male. If on one side a female connector is required, Allectra offers the suitable adapters.
Together with such an adapter (on air or vacuum side), the standard pin numbering is regained.

They come ready for use.



General Specification UHV Gender Changer

Vacuum	HV and UHV <10^{-10} mbar
Pins	Gold plated copper alloy
Housing	Peek unfilled / Ceramic
Sizes	Standard Sub-D, 9 to 50 pin
Gender	Female to Female
Connection	"straight through": Together with feedthrough, a 1:1 connection is established

General Specification AIR Gender Changer

Housing	polymer
Sizes	Standard Sub-D, 9 to 50 pin
Gender	Female to Female
Connection	"straight through": Together with feedthrough, a 1:1 connection is established

Gender adaptors for Sub-D UHV PEEK / Ceramic Female to Female

VACUUM	No. OF PINS	PART NUMBER
UHV PEEK	9	211-FS09-GA-PK
UHV PEEK	15	211-FS15-GA-PK
UHV PEEK	25	211-FS25-GA-PK
UHV PEEK	37	211-FS37-GA-PK
UHV PEEK	50	211-FS50-GA-PK
CERAMIC VERSIONS		
UHV CER	9	211-FS09-GA-UHV
UHV CER	15	211-FS15-GA-UHV
UHV CER	25	211-FS25-GA-UHV
UHV CER	37	211-FS37-GA-UHV
UHV CER	50	211-FS50-GA-UHV

Polarity adaptors for Sub-D Air side Female to Female

AIR	No. OF PINS	PART NUMBER
AIR	9	211-FS09-GA-AIR
AIR	15	211-FS15-GA-AIR
AIR	25	211-FS25-GA-AIR
AIR	37*	211-D37-ADR
AIR	50*	211-D50-ADR

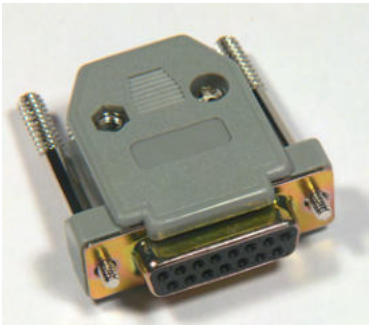
*) Short cable adaptor

Air side connectors for standard Sub-D

For standard Sub-D feedthroughs Allectra offers three types of connectors:

- Solder cup versions (up to 1mm ø wire)
- Solder cup High Current versions (see page 1.10)
- Versions for crimp pins including thermocouple pins (see page 1.20)

All versions come with polymer housings and thumb srews for fixing. Colour might vary.
The max. rated temperature for these connectors is 65°C



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

VACUUM	NO. OF POLES	PART NUMBER
AIR	9	211-FS09-AIR
AIR	15	211-FS15-AIR
AIR	25	211-FS25-AIR
AIR	37	211-FS37-AIR
AIR	50	211-FS50-AIR

Male versions available on request

DE: Info@allectra.com
UK: uk@allectra.com
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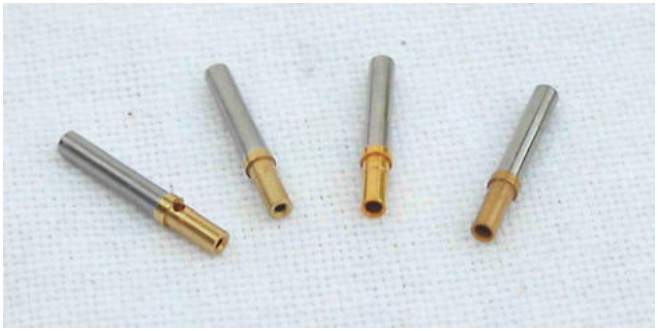
Crimp Pins for Sub-miniature D, Female

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

- Small versions for wires down to 0.08mm ø
- Basic versions without additional Stainless Steel outer
- High Current versions for wires up to 1.3mm ø
- Pins for use without housings
- Zero-magnetic pins and Ni-plated pins are available on request.



SMALL, STANDARD and HC Pins. Hole diameter varies

General Specification CRIMP PINS, female

Vacuum	High Vacuum and UHV
Material	Gold plated copper alloy
SS shell	Not on Basic Pins
Wire diameters	0.25 – 1.0 mm (Standard + Basic)
	0.08 to 0.5 mm (Small)
	0.8 to 1.3mm (High Current)
Crimp tool	214-CTOOL-SUB-D (wires >0.35mm)
	214-CTOOL (no SMALL pins)
	214-CTOOL-HQ (all types)

BASIC pins without Stainless Steel Outer

"NH" pin: For use with no housing.

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.

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

TYPE	No. PER PKT.	PART NUMBER
STANDARD	10	212-PINF-10
STANDARD	15	212-PINF-15
STANDARD	25	212-PINF-25
BASIC	10	212-PINF-10-B
BASIC	25	212-PINF-25-B

SMALL Sub-D Crimp Pins for thin wire
Fits HV and UHV Female Plugs

TYPE	No. PER PKT.	PART NUMBER
SMALL	10	212-PINF-10-S
SMALL	15	212-PINF-15-S
SMALL	25	212-PINF-25-S

HIGH CURRENT Crimp Pins for Sub-D
Fits HV and UHV Female Plugs

TYPE	No. PER PKT.	PART NUMBER
HIGH CURRENT	10	212-PINF-10-HC
HIGH CURRENT	15	212-PINF-15-HC
HIGH CURRENT	25	212-PINF-25-HC

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

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

Crimp Pins for Sub-miniature D, Male

For in-vacuum connections, male Crimp Pins are offered.
Of course the pins can be used also for other connections, an insulation is possible by shirnk hose or Kapton hoses, for example
Three different versions are offered for different cable sizes,
The size of the pin is always 1mm

General Specification CRIMP PINS, male

Pin diameter	1mm
Vacuum	High Vacuum and UHV
Material	Gold plated copper alloy
Wire diameters	0.25 – 1.0 mm (Standard)
	0.08 to 0.5 mm (Small)
	0.8 to 1.3mm (High Current)
Crimp tool	214-CTOOL-SUB-D (wires >=0.35mm)
	214-CTOOL (no SMALL pins)
	214-CTOOL-HQ (all types)

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

TYPE	No. PER PKT.	PART NUMBER
STANDARD	10	212-PINM-10
STANDARD	15	212-PINM-15
STANDARD	25	212-PINM-25

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

TYPE	No. PER PKT.	PART NUMBER
SMALL	10	212-PINM-10-S
SMALL	15	212-PINM-15-S
SMALL	25	212-PINM-25-S

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

TYPE	No. PER PKT.	PART NUMBER
HIGH CURRENT	10	212-PINM-10-HC
HIGH CURRENT	15	212-PINM-15-HC
HIGH CURRENT	25	212-PINM-25-HC

General Specification Crimp Tools for Sub-D

214-CTOOL-SUB-D: Easy to use 4-indent tool for Standard and High Current pins. Includes a positioner. No settings required. Wire diameter >=0.35mm

214-CTOOL: Crimp tool for thin wall turned pins, not suitable for SMALL pins. Can also be used for larger pins

214-CTOOL-HQ: Adjustable 4-indent crimp tool for various applications, with positioner. Professional quality with highly reproducable results

Crimp Tools for Sub-D pins

TYPE	PART NUMBER
Std / HC pins, Positioner	214-CTOOL-SUB-D
Std / HC pins	214-CTOOL
Small /Std / HC pins, Positioner	214-CTOOL-HQ

214-CTOOL-SUB-D

214-CTOOL

214-CTOOL-HQ

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Sub-miniature D Feedthroughs for use with various types of Thermocouples

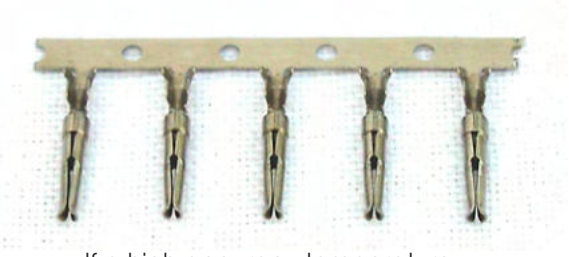
Sub-D F/T's may be used for T/Cs. A Standard D-Type Feedthrough is used but the Air and Vacuum side Pins are changed to T/C types. Although the use of standard Pin material in contact with the T/C Pins results in the creation of two T/C junctions, the measurement error introduced is negligible provided the vacuum side of the Feedthrough contacts and the air side are at the same temperature. Tests showed a maximum error of less than 0.5K

General Specification K type T/C Crimp Pins

Vacuum/ Air	High Vacuum and UHV
Material	K Type Chromel® / Alumel®
	Type N Nisil® / Nicrosil®
	Type J Iron / Constantan®
	Type T Copper / Constantan®
Fits wire	0.25 – 0.6 mm
Crimp tool	214-CTOOL-TC or 214-CTOOL-TC-HQ
Pack contents	5 Pairs = 5 pieces (+) and 5 pieces (-)

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

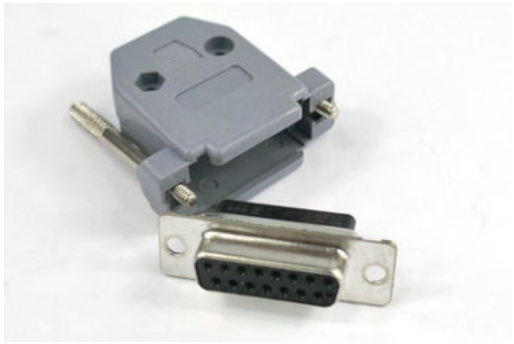
TYPE	No. PER PKT.	PART NUMBER
K, Female	2x5	213-PINF-K
N, Female	2x5	213-PINF-N
J, Female	2x5	213-PINF-J
T, Female	2x5	213-PINF-T



If a high accuracy temperature measurement is required, the use of a Platinum Resistance Thermometer (PT100) is recommended. See Sec. 6

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

TYPE	No. PER PKT.	PART NUMBER
K, Male	2x5	213-PINM-K
N, Male	2x5	213-PINM-N
J, Male	2x5	213-PINM-J
T, Male	2x5	213-PINM-T



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

TYPE	SIZE	PART NUMBER
AIR	9	211-FS09-ATC
AIR	15	211-FS15-ATC
AIR	25	211-FS25-ATC
AIR	37	211-FS37-ATC
AIR	50	211-FS50-ATC

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

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

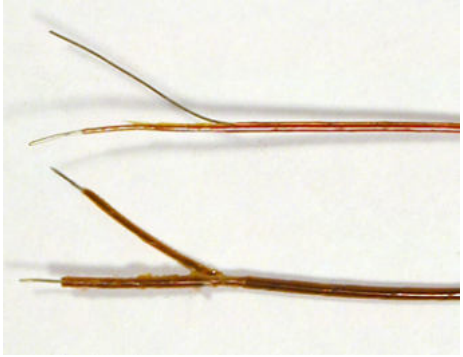
214-CTOOL-TC-HQ

214-CTOOL-TC

Thermocouple Wires Type K / N

Here is a selection out of our Kapton insulated thermocouple wires. Versions without junction are listed here.

The full range including bare wires and PTFE insulated wires is listed in Section 3!



Single insulated 312-KAP-TCK (top)

Double insulated 311-KAP-TCK (bottom)

General Specification 312-KAP-TC (K, N, E)

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 /E

T/C TYPE	LENGTH	PART NUMBER
K	1 m	312-KAP-TCK-1M
K	5 m	312-KAP-TCK-5M
K	10 m	312-KAP-TCK-10M
N	1 m	312-KAP-TCN-1M
N	5 m	312-KAP-TCN-5M
N	10 m	312-KAP-TCN-10M
E	5 m	312-KAP-TCE-5M

Note: Wires with junction made available on request

Radiation resistant 311-KAP-TC(K/N/T)-RAD

Vacuum	UHV
Temp.	-200°C to 300°C
Radiation resistant	up to 10^9 rad

Other specifications according 311-KAP-TC(K)

Radiation resistant Kapton Isolated Thermocouple wires Types K / N / T

T/C TYPE	LENGTH	PART NUMBER
K	1 m	301-KAP-TCK-1M
K	5 m	301-KAP-TCK-5M
K	10 m	301-KAP-TCK-10M
N	1 m	311-KAP-TCN-RAD-1M
N	5 m	311-KAP-TCN-RAD-5M
N	10 m	311-KAP-TCN-RAD-10M
T	1 m	311-KAP-TCT-RAD-1M
T	5 m	311-KAP-TCT-RAD-5M
T	10 m	311-KAP-TCT-RAD-10M

Note: Wires with junction made available on request

See section 3!

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 /J

T/C TYPE	LENGTH	PART NUMBER
K	1 m	311-KAP-TCK-1M
K	5 m	311-KAP-TCK-5M
K	10 m	311-KAP-TCK-10M
J	10 m	311-KAP-TCJ-10M

Note: Wires with junction made available on request

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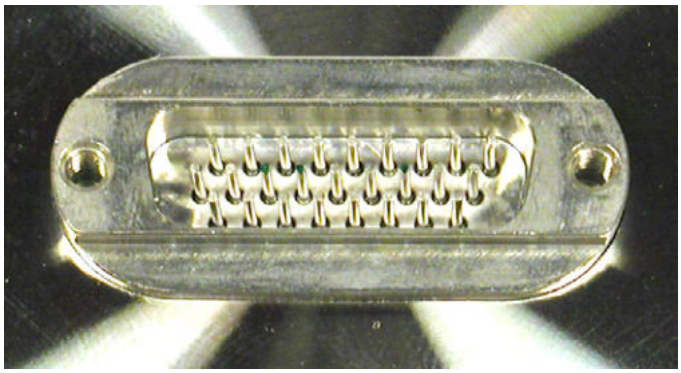
High Density Sub-D

26, 44 and 78 Pins in a Standard Shell

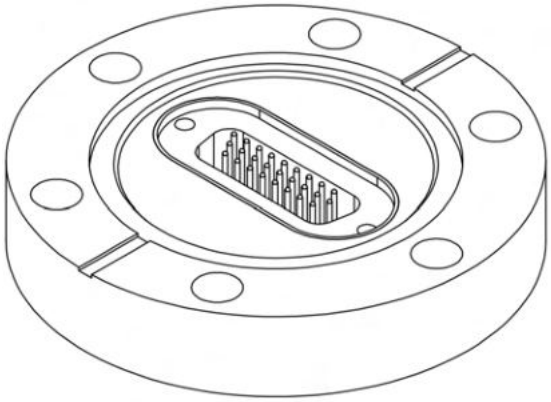


High density Sub-D Connectors offer more pins on the same shell size:
15 Pin standard- Sub-D -> 26 pin HD Sub-D
25 Pin standard- Sub-D -> 44 pin HD Sub-D
50 Pin standard- Sub-D -> 78 pin HD Sub-D
A 3-row / 4-row pin arrangement with reduced pin diameter makes this possible.

Size	H26	HD44	HD78
CF40	1	-	-
CF63	3	2	1
CF100	8	5	2

List of how many feedthroughs of one shell size will fit to a given CF flange size.

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



The Allectra 26 pin High Density Sub-D feedtrhough fits on a DN40CF Flange.

Air Side Connector. The connector is solder type. It comes with a thumb screw housing.

High Density Sub-D Feedthoughs on CF Flanges / Ceramic Connectors / Weldables

Here the most common assemblies of High Density feedthroughs on CF flanges are listed.
Combinations with other feedthroughs 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

Sub-D Feedthroughs on CF Flanges, HIGH DENSITY

SIZE	NO. OF PINS	PART NUMBER
40CF	26	210-HD26-C40
63CF	44	210-HD44-C63
63CF	78	210-HD78-C63
100CF	78	210-HD78-C100
63CF	2x26 (52)	210-HD26-C63-2
63CF	3x26 (78)	210-HD26-C63-3
63CF	2x44 (88)	210-HD44-C63-2
100CF	2x78 (156)	210-HD78-C100-2

Please ask for a quote for other combinations!

Sub-D High Density CERAMIC CONNECTORS, VACUUM SIDE

TYPE	NO. OF PINS	PART NUMBER
UHV Ceramic	26	211-FS26H-UHV
UHV Ceramic	44	211-FS44H-UHV
UHV Ceramic	78	211-FS78H-UHV

26 / 44 / 78 off Crimp pins are included!

PEEK connectors are listed on page 1.25

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.

Weldable Sub-D Feedthroughs HIGH DENSITY

SIZE	NO. OF PINS	PART NUMBER
WELD	26	218-HD26-SS
WELD	44	218-HD44-SS
WELD	78	218-HD78-SS

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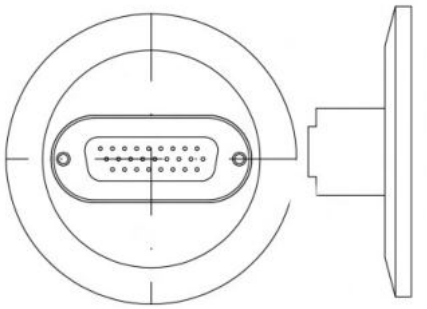
High Density Sub-D Feedthoughs on KF and ISO Flanges

Here the most common assemblies of High Density feedthroughs on CF flanges are listed.
Combinations with other feedthroughs are available!

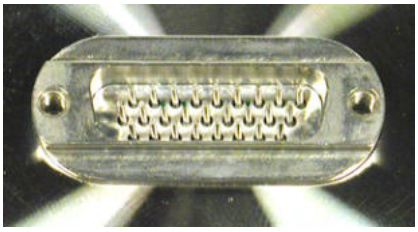


General Specifications HIGH DENSITY SUB-D

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

Sub-D Feedthroughs on KF / ISO-K Flanges, HIGH DENSITY

SIZE	NO. OF PINS	PART NUMBER
40KF	26	210-HD26-K40
50KF	26	210-HD26-K50
ISO-K63	44	210-HD44-ISO63
ISO-K63	78	210-HD78-ISO63
ISO-K63	2x44 (88)	210-HD44-ISO63-2
ISO-K100	2x78 (156)	210-HD78-ISO100-2



Sub-D HIGH DENSITY Gender Changers for Air side

TYPE	NO. OF PINS	PART NUMBER
Female-Female	26	211-HD26-ADR
Female-Female	44	211-HD44-ADR
Female-Female	78	211-HD78-ADR

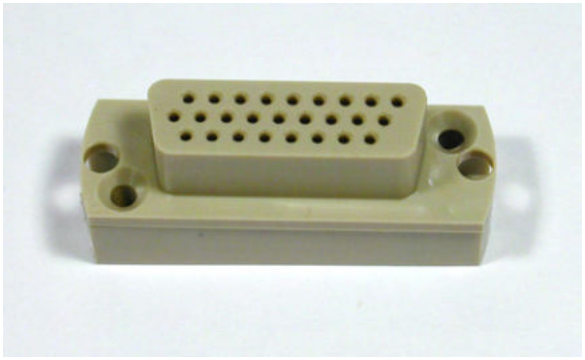
Why is there no version with 15 pins and with 68 pins?

The design of the Standard 15-pin Sub D of Allectra fits to a DN40CF, so there is no significant space saving by using a High Density version.
The 68 pin version would be bigger than the 78 pin version (3 row/ 4 row design).
Nevhertheless, if you have a reasonable demand for these sizes, Allectra can produce these types.

High Density Sub-D

Connectors for vacuum and air side

For all sizes, fitting vacuum side connectors made from PEEK or Ceramic (page 1.23) are offered. Aluminium housings with strain relief are available.



Important: The versions with 26 and 44 pin are not symmetric on air and vacuum side. By this, the vacuum side connectors will **not** fit to the air side and vice versa. Allectra offers also UHV compatible connectors for the air side for speial applications! (Please contact sales office for a quote)

Sub-D High Density CONNECTORS, VACUUM SIDE

TYPE	NO. OF PINS	PART NUMBER
HV/ UHV	26	211-FS26H-PK
HV/ UHV	44	211-FS44H-PK
HV/ UHV	78	211-FS78H-PK

26 / 44 / 78 off Crimp pins are included!

Sub-D High Density MALE CONNECTORS, VACUUM SIDE

TYPE	NO. OF PINS	PART NUMBER
HV/ UHV	26	211-MS26H-PK
HV/ UHV	44	211-MS44H-PK
HV/ UHV	78	211-MS78H-PK

Please note: These versions fit to the vacuum side connectors listed above.
Contact sales office for versions fitting to the air side of our feedthroughs for special applications.
26 / 44 / 78 off Crimp pins are included!

Sub-D High Density CONNECTORS AIR SIDE

TYPE	NO. OF PINS	PART NUMBER
AIR	26	211-FS26H-AIR
AIR	44	211-FS44H-AIR
AIR	78	211-FS78H-AIR

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 non-magnetic versions on request

Sub-D High Density CRIMP PINS

TYPE	NO. OF PINS	PART NUMBER
FEMALE	10	212-PINFHD-10
FEMALE	26	212-PINFHD-26
FEMALE	44	212-PINFHD-44
MALE	10	212-PINMHD-10
MALE	26	212-PINMHD-26
MALE	44	212-PINMHD-44

For 78 pins please use 3x26 pin packages
HD vacuum connectors include already crimp pins
Non-magnetic female pins are available as well, add "-NM" to the part number

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Combination Sub-D:

Power, Coaxial and Standard Pin Feedthroughs

Combination Feedthroughs offer High Power Pins or Coaxial Pins (see page 1.24) in the shell size of Sub-D.
Also combinations with standard pins are available.
The Power Pins are ideal for heater applications.

General Specifications COMBINATION POWER SUB-D

Compliance	DIN 41652, MIL-C-24308
Power Pin-ø	3.6 mm
Standard Pin-ø	1.0 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel
Test Voltage	500V DC
Max. Current	Power Pin: 20A continuous
Max Current	Standard Pin: 3A
Temp.	-200°C to 230°C
Leak rate	$<5x10^{-10}$ mbar-l/s He

Sub-D Feedthroughs on CF Flanges, POWER and MIXEED POWER

SIZE	NO. OF PINS	PART NUMBER
40CF	2P+5S	210-X15-2P5-C40
40CF	3P	210-X15-3P-C40
63CF	5P	210-X15-5P-C63
63CF	2x 2P+5S	210-X15-2P5-C63-2
63CF	2x 3P (6P)	210-X15-3P-C63-2
63CF	2x 5P (10P)	210-X15-5P-C63-2

P: Power pin, S: Standard pin

Sub-D Feedthroughs on KF and ISO-K Flanges, POWER and MIXEED POWER

SIZE	NO. OF PINS	PART NUMBER
40KF	2P+5S	210-X15-2P5-K40
40KF	3P	210-X15-3P-K40
63ISO-K	5P	210-X15-5P-ISO63
63ISO-K	2x 2P+5S	210-X15-2P5-ISO63-2
63ISO-K	2x 3P (6P)	210-X15-3P-ISO63-2
63ISO-K	2x 5P (10P)	210-X15-5P-ISO63-2

C: Coaxial pin, S: Standard pin

Combination Sub-D:

Connectors and crimp pins

UHV connectors made out of PEEK as well as HV connetors are offerd for combination Sub-D feedtrhoughs.
High power and coaxial types use the same connetor sizes.

General Specifications Power Pins

Power Pin-ø	3.6 mm
Pin material	Gold plated
Max. Current	20A
Max. cable ø	2.0mm
Temp.	200°C to 230°C
Recommemded cables:	
	311-KAPM-200 (flexible)
	311-KAP-180 (massive Cu)

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 air and vacuum side 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.

HIGH POWER
Vacuum side Connectors

TYPE	NO. OF PINS	PART NUMBER
HV*	2P/C +5	211-FX15-2X5-HV
HV	3P/C	211-FX15-3X-HV
HV	5P/C	211-FX25-5X-HV
UHV*	2P/C +5	211-FX15-2X5-PK
UHV	3P/C	211-FX15-3X-PK
UHV	5P/C	211-FX25-5X-PK
HV Male	2P/C +5	211-MX15-2X5-HV
HV Male	3P/C	211-MX15-3X-HV
HV Male	5P/C	211-MX25-5X-HV
UHV Male	2P/C +5	211-MX15-2X5-PK
UHV Male	3P/C	211-MX15-3X-PK
UHV Male	5P/C	211-MX25-5X-PK

*) Vacuum connectors include 5 off standard crimp pins
Please order the requried power or coacial pins separately

HIGH POWER
Air side Connectors

TYPE	NO. OF PINS	PART NUMBER
AIR	2P/C +5S	211-FX15-2x5-AIR
AIR	2P/C	211-FX15-3X-AIR
AIR	5P/C	211-FX25-5X-AIR
AIR Male	2P/C +5	211-MX15-2X5-AIR
AIR Male	3P/C	211-FX15-3X-AIR
AIR Male	5P/C	211-FX25-5X-AIR

*) Vacuum connectors include 5 off crimp pins
P: Power pins, C: Coaxial pins

HIGH POWER
Pins (female and Male)

TYPE	NO. OF PINS	PART NUMBER
Power Female	1 off	212-POWER-F
Power Male	1 off	212-POWER-M

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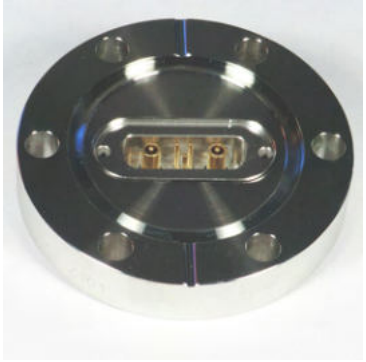
Combination Sub-D:

Coaxial Versions

Coaxial Mixed Sub.D feedtrhoughs are a good choice, if a floating shield coaxial connection is required, but the impedance is not an issue.
Up to 5 floating shield coaxials are offered in one feedthrough in the shell size of a standard 25-way Sub-D



General Specifications
COMBINATION COAXIAL SUB-D

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

Sub-D Feedthroughs on CF Flanges, POWER and MIXEED POWER

SIZE	NO. OF PINS	PART NUMBER
40CF	2C+3S	210-X15-2C3-C40
40CF	3C	210-X15-3C-C40
63CF	5C	210-X15-5C-C63
63CF	2x 2C+5S	210-X15-2C3-C63-2
63CF	2x 3C (6C)	210-X15-3C-C63-2
63CF	2x 5C (10C)	210-X15-5C-C63-2

C: Coaxial pin, S: Standard pin

Sub-D Feedthroughs on KF and ISO-K Flanges, POWER and MIXEED POWER

SIZE	NO. OF PINS	PART NUMBER
40KF	2C+5S	210-X15-2C3-K40
40KF	3C	210-X15-3C-K40
63ISO-K	5C	210-X15-5C-ISO63
63ISO-K	2x24C+5S	210-X15-2C3-ISO63-2
63ISO-K	2x 3C (6C)	210-X15-3C-ISO63-2
63ISO-K	2x 5C (10C)	210-X15-5C-ISO63-2

C: Coaxial pin, S: Standard pin

Please note: The 5-pin power and coaxial feedthroughs are not symmetrical, BUT you can turn an air side connector by 180° to fit on the vacuum side. The housings are made to accept this. Please mind, that the pin numbering shown on the connectors is no longer valid in this case.

Combination Sub-D:

Coaxial connectors and pins

UHV connectors made out of PEEK as well as HV connetors are offerd for combination Sub-D feedtrhoughs.
High power and coaxial types use the same connetor sizes.
Actually 3 types are offered:
- 2x Coax or Power pins + 5x 1mm pins
- 3x Coax or Power pins
- 5x Coax or Power pins

General Specifications Coaxial Pins

Centre Pin-	1 mm
Pin material	Gold plated
Max. Current	3A
Impedance	not constant
Temp.	-40°C to 120°C (HV housings)
	-200°C to 230°C UPEEK housings)
Recommemded coaxial cables:	
	311-KAP50
	311-KAP50-RAD

The air and vacuum side 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.

High Voltage pins can be used for in-vacuum connections either on its own or with Mixed male and female connectors. The in-vacuum voltage rating is 5KV DC. Test voltage 10KV in vacuum. Air side use max. 2.7KV DC
A feedthrough for these pins is NOT available.

COAXIAL SUB-D
Vacuum side Connectors

TYPE	NO. OF PINS	PART NUMBER
HV*	2P/C +5	211-FX15-2X5-HV
HV	3P/C	211-FX15-3X-HV
HV	5P/C	211-FX25-5X-HV
UHV*	2P/C +5	211-FX15-2X5-PK
UHV	3P/C	211-FX15-3X-PK
UHV	5P/C	211-FX25-5X-PK
HV Male	2P/C +5	211-MX15-2X5-HV
HV Male	3P/C	211-MX15-3X-HV
HV Male	5P/C	211-MX25-5X-HV
UHV Male	2P/C +5	211-MX15-2X5-PK
UHV Male	3P/C	211-MX15-3X-PK
UHV Male	5P/C	211-MX25-5X-PK

*) Vacuum connectors include 5 off standard crimp pins
Please order the requried power or coacial pins separately

COAXIAL SUB-D
Air side Connectors

TYPE	NO. OF PINS	PART NUMBER
AIR	2P/C +5S	211-FX15-2x5-AIR
AIR	2P/C	211-FX15-3X-AIR
AIR	5P/C	211-FX25-5X-AIR
AIR Male	2P/C +5	211-MX15-2X5-AIR
AIR Male	3P/C	211-FX15-3X-AIR
AIR Male	5P/C	211-FX25-5X-AIR

*) Vacuum connectors include 5 off crimp pins

COAXIAL SUB-D
Pins (female and Male)

TYPE	NO. OF PINS	PART NUMBER
Coaxial Female	1 off	212-COAX-F
Coaxil Male	1 off	212-COAX-M

HIGH VOLTAGE PINS
fitting to MIXED connectors (female and Male)

TYPE	NO. OF PINS	PART NUMBER
HV Female	1 off	212-HV-F
HVI Male	1 off	212-HV-M

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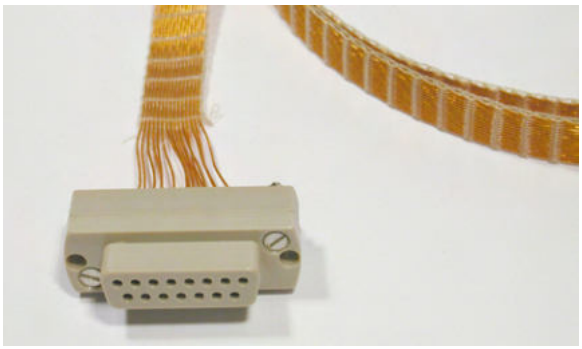
Sub-D ready made In-Vacuum Cables

Allectra offers a full range of vacuum cables including both standard types and cables made to customers' specitications. 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 / 5A max for High Current
Voltage	500V DC
Temp.	Defined by connectors

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
HV (PTFE)	15	380-D15FXHPT-500
HV (PTFE)	25	380-D25FXHPT-500
HV (PTFE)	37	380-D37FXHPT-500
HV (PTFE)	50	380-D50FXHPT-500

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. One connector is made completely according customer specification.

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
HV	15	380-D15FXHR-500
HV	25	380-D25FXHR-500
HV	37	380-D37FXHR-500
HV	50	380-D50FXHR-500

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

VACUUM	No. OF PINS	PART NUMBER
UHV / HV	9	380-D09FXPR-500
UHV / HV	15	380-D15FXPR-500
UHV / HV	25	380-D25FXPR-500
UHV / HV	37	380-D37FXPR-500
UHV / HV	50	380-D50FXPR-500

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

Sub-D ready made In-Vacuum Cables

High Density

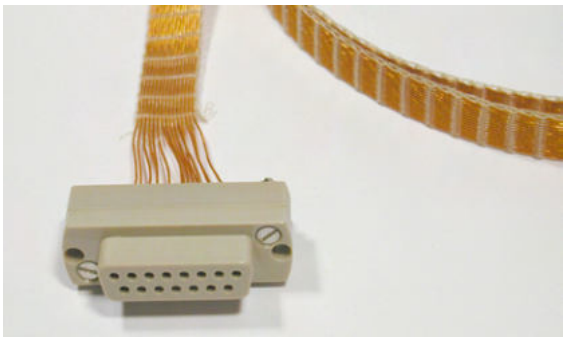
For High density Sub-D cables, mainly ribbon cable is used.
With 4, 10, 15 and 26 way ribbon cables all the sizes can be covered.
We use as well other cables out of our wide cable section according your requirements.

Cable types, Allectra can offer:

- female to open end
- male to open end
- female to male
- female to female (straight or cross over)
- male to male (straight or cross over)
- Y-cables and other adapter cables
  for example from. 25 pin to 3x 9 pin connectors

Most versions can be made with shields for signal protection
High current Sub-D cables
If required, various cables can be used on one connector
Alllectra recommends the use of a housing for better handling and strain rellif of the cables.

Top: 26 pin HD connector with housing and 26way ribbon cable
Botton: Special BNC to single wires cable



In-Vacuum High Density KAPTON Ribbon Cables
UHV PEEK Socket to open end, 500mm long

VACUUM	No. OF PINS	PART NUMBER
UHV PEEK	26	380-HD26FXUR-500
UHV PEEK	44	380-HD44FXUR-500
UHV PPEK	78	380-HD78FXUR-500

Please ask for a quote for custom lenght cables, cables with connectors on both sides and other modifications.
Adapter cables form Standard-Density Sub-D to High Density versions are available on request.

How the part code describes the product:

380: Ready made cable group
HD: High Density connectors
26/44/78: Number of pins
F: One female connector
X: Open end
H /P: High vac or Peek connectors
R: Ribbon cable, Kapton insulated
500: Length in mm

DE: Info@allectra.com
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Tools for Sub-D cable manufacturing

Here the various tools are listed together:
- Cable stripping tools
- Crimp toos
- Pin insertion and removal tools

Additiional useful components are offered in Section 3

321-STRIP10. Both types have 6 settings for wire sizes

tCable stripper
for sizes up to 1mm ø

DIAMETER	PART NUMBER
0.12 -0.4mm	321-STRIP04
0,3 - 1.0mm	321-STRIP10

214-CTOOL, for thin wall turned pins

214-CTOOL-SUB-D, for standard Sub-D pins, with positioner

214-CTOOL-SUB-D-HQ, adjustable crimp tool, with positioner

Crimp Tools
for Sub-D Pins Standard and Thermocouple

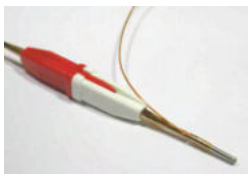
TYPE	PART NUMBER
Circular	214-CTOOL
Sub-D Standard	214-CTOOL-SUB-D
Sub-D High Quality	214-CTOOL-HQ
Thermocuople Std	214-CTOOL-TC
Thermocouple HQ	214-CTOOL-TC-HQ
Thermocouple HQ	214-CTOOL-TC-HQ2

Pin Insertion and Removal Tool
for Standard, HD and Power / Coax Pins

TYPE	USE FOR	PART NUMBER
Sub-D Standard	HV	214-CRIMPINS
Sub-D Std "BLACK"	HV	214-CRIMPINS-PRO-V2
Sub-D High Density	HV	214-CRIMPINS-HD
Power/Coax	HV/UHV	214-EXT-POWER

For UHV connectors, only the 214-EXT-POWER tool is required

High Quality crimp tools for stamped thermocouple pins, with positioners.
Top: 214-CTOOL-TC-HQ with 3 crimp positions
Bottom: 214-CTOOL-TC-HQ2 with 2 crimp positions.
Crimp results are similar for both tools



Various Pin Removal toos: 214-CRIMPINS

214-CRIMPINS-PRO-V2 used for HD housings type V2

214-EXT-POWER for POWER and COAX pins

Simple low cost crimp tool for thermocouple pins.

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

2.1 CM FEEDTHROUGHS

-> Page 2.2

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

2.1 CM SETS

-> Page 2.3

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

2.3 CM: CONNECTORS

-> Page 2.4

Industry standard air side sockets
PEEK vacuum side sockets

2.4 CM: IN-VACUUM CABLES

-> Page 2.5

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

2.5 DUAL IN-LINE (DIL)

-> Page 2.6

Dual In-line Feedthroughs
for direct connection to PCBs

TOOLS FOR CABLE STRIPPING AND CRIMPING

-> Sec. 6

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

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

220-CM12-C40-2
air side view

Specifications

Compliance	IEC60130-9
Pin Diameter	1.6mm (6 pin) / 1.0mm (12+19 pin)
Test Voltage	500V DC (pin to pin / pin to GND)
Current	5A (6 pin) / 3A (12 and 19 pin)
Temp.	-200°C to 220°C
Leak rate	<5x10^{-10} mbar l/s He

Circular Miniature Feedthroughs 6 Pin High Current Versions

FLANGE	No. OF PINS	PART NUMBER
WELD	6	220-CM6
16CF	6	220-CM6-C16
40CF	6	220-CM6-C40
40CF	12 (2x6)	220-CM6-C40-2
63CF	12 (2x6)	220-CM6-C63-2
63CF	18 (3x6)	220-CM6-C63-3

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

Circular Miniature Feedthroughs 12 Pin Versions

FLANGE	No. OF PINS	PART NUMBER
WELD	12	220-CM12
16CF	12	220-CM12-C16
40CF	12	220-CM12-C40
40CF	24 (2x12)	220-CM12-C40-2
63CF	24 (2x12)	220-CM12-C63-2
63CF	36 (3x12)	220-CM12-C63-3

220-CM12-C16 air side view

Circular Miniature Feedthroughs 19 Pin Versions

FLANGE	No. OF PINS	PART NUMBER
WELD	19	220-CM19
16CF	19	220-CM19-C16
40CF	19	220-CM19-C40
40CF	38 (2x19)	220-CM19-C40-2
63CF	38 (2x19)	220-CM19-C63-2
63CF	57 (3x19)	220-CM19-C63-3

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

...CM Sockets: Page 2.4 ..... CM Cables: Page 2.5.....

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

The sets contain:

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

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

General Specifications

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

220-CM19-C16 with air side connector

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

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

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

FLANGE	No. OF PINS	PART NUMBER
16CF	6	220-SET6-C16-SR
40CF	6	220-SET6-C40-SR
40CF	12 (2x6)	220-SET6-C40-2-SR
63CF	12 (2x6)	220-SET6-C63-2-SR

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

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

FLANGE	No. OF PINS	PART NUMBER
16CF	12	220-SET12-C16-SR
40CF	12	220-SET12-C40-SR
40CF	24 (2x12)	220-SET12-C40-2-SR
63CF	24 (2x12)	220-SET12-C63-2-SR

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

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

FLANGE	No. OF PINS	PART NUMBER
16CF	19	220-SET19-C16-SR
40CF	19	220-SET19-C40-SR
40CF	38 (2x19)	220-SET19-C40-2-SR
63CF	38 (2x19)	220-SET19-C63-2-SR

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

Circular Miniature Feedthrough Housings - Spare parts - REDUCED

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

220-SR Housing with Strain Relief clamp

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

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CM Series Air and Vacuum Sockets

PEEK Vacuum Side Sockets

- PEEK UHV Vacuum Side Sockets, 6, 12 or 19 way
- SS Housings with strain relief
- Air Side Sockets 6, 12 or 19 way
- Straight or 90° Air Side Connector

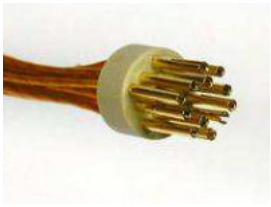
Allectra recommends the use of the housing for handling

Specifications

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

Vacuum Sockets including Standard Pins STANDARD type (without housing)

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



Back shell with pins during assembly

Vacuum Sockets including Standard Pins Type with Housing and Strain Relief

REDUCED

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

Specifications Pins

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

Replacement Pins Standard and Small Types

TYPE	QTY	PART NUMBER
Standard	12	220-CM-PINF-12
Standard	20	220-CM-PINF-20
Small	12	220-CM-PINF-12-S
Small	20	220-CM-PINF-20-S

The 6-pin Versions use the pins 360-CRBC-1.6

See page 52!

Air Side Sockets Straight and 90° types

No. OF PINS	TYPE	PART NUMBER
6	STRAIGHT	220-CON6-AIR
6	90°	220-CON6-AIR90
12	STRAIGHT	220-CON12-AIR
12	90°	220-CON12-AIR90
19	STRAIGHT	220-CON19-AIR
19	90°	220-CON19-AIR90

... CM Feedthroughs: Page 2.2 ..... CM Ready made cables: Page 2.5...

Vacuum Ready Cables for Circular Miniature (CM) Series

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

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

Specifications

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

Top: Cable without fitted Housing

Top of page: Cable with Housing and Strain Relief Socket

Left: Cable with Housing and Strain Relief Socket + Braid

Vacuum Ready Cable for CM Series with STRAIN RELIEF Socket — NEW

No. OF PINS	LENGTH	PART NUMBER
6	250	380-CM6-250-SR
6	500	380-CM6-500-SR
12	250	380-CM12-250-SR
12	500	380-CM12-500-SR
19	250	380-CM19-250-SR
19	500	380-CM19-500-SR

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

No. OF PINS	LENGTH	PART NUMBER
6	250	380-CM6-250-SRB
6	500	380-CM6-500-SRB
12	250	380-CM12-250-SRB
12	500	380-CM12-500-SRB
19	250	380-CM19-250-SRB
19	500	380-CM19-500-SRB

Vacuum Ready Cable for CM Series Socket without housing

No. OF PINS	LENGTH	PART NUMBER
6	250	380-CM6-250
6	500	380-CM6-500

Air Side Cables

Air Side Cable for CM Series With mounted STRAIGHT plug

No. OF PINS	LENGTH	PART NUMBER
6	1 m	220-CAB6-AIR
6 (HC)	1 m	220-CAB6-AIR-HC
12	1 m	220-CAB12-AIR
19	1 m	220-CAB19-AIR

HC = High current

Air Side Cables per Metrer Shielded cables (without connectors) — NEW

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

*) High Current cable with 6x 0.75mm², shielded
Other cabels: Shielded Twisted Pair 0.14mm²

Air Side Cable for CM Series With mointed RIGHT ANGLE plug

No. OF PINS	LENGTH	PART NUMBER
6	1 m	220-CAB6-AIR90
12	1 m	220-CAB12-AIR90
19	1 m	220-CAB19-AIR90

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

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

... CM Feedthroughs: Page 2.2 ..... CM Feedthrough Kits: Page 2.3...

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Dual In-line Feedthroughs

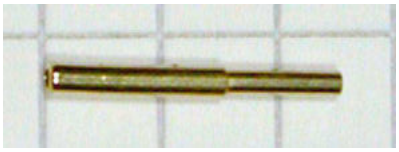
for direct connection to Printed Circuit Boards

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

Specifications

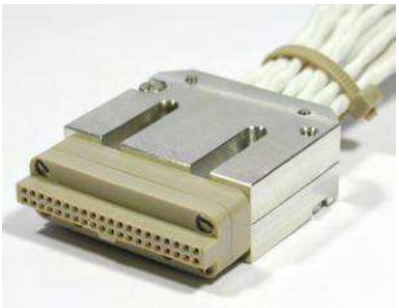
Vacuum	UHV
Materials	Stainless Steel/ Glass Ceramic
Temp.	-40°C to 230°C
Current per pin	1A
Pin spacing	2mm pitch

230-DIL40M-C63



Crimp pin 360-CRF-05

Vacuum side connector



Vacuum side connector with optional housing

Dual In-line Feedthroughs 2mm x 2mm pitch

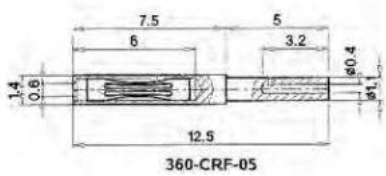
FLANGE	No. OF PINS	PART NUMBER
WELD	40	230-DIL40M
63CF	40	230-DIL40M-C63
63CF	80	230-DIL80M-C63-2
63CF	120	230-DIL120M-C63-3
100CF	40	230-DIL40M-C100
100CF	80	230-DIL80M-C100-2
100CF	120	230-DIL120M-C100-3
100CF	160	230-DIL160M-C100-4

Dual In-line Feedthroughs Connectors for Air and Vacuum

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

Dual In-line Feedthroughs Pins for vacuum side

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



360-CRF-05

Dual In-line Feedthroughs Air side ribbon cable 1m

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

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

.. ... UHV Solder: Sec. 6 ... PTFE Ribbon Cable: Sec. 6...

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

3.1 COAXIAL: BNC -> Page 3.2

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

3.2 COAXIAL: BNC 50Ω -> Page 3.3

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

3.3 COAXIAL: SMA 18GHz -> Page 3.4

NEW

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

3.4 COAXIAL: MHV -> Page 3.6

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

3.5 COAXIAL: 50Ω SMB -> Page 3.7

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

3.6 COAXIAL: SHV -> Page 3.8

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

3.7 COAXIAL: SHV10 & SHV20 -> Page 3.10

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

3.8 COAXIAL: TYPE K 40GHz -> Page 3.11

Type K 40GHz Bulkhead Feedthrough

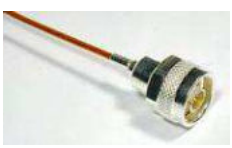
3.9 COAXIAL: TYPE N and 7/16 -> Page 3.12

NEW

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

3.10 COAXIAL: MICRODOT -> Page 3.13

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



3.11 COAXIAL: CONNECTORS -> Page 3.14

Plugs & Sockets for Coaxial Feedthroughs

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

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Standard BNC Feedthroughs, Single & Double Sided

Grounded & Floating Shield / BNC Vacuum Cables

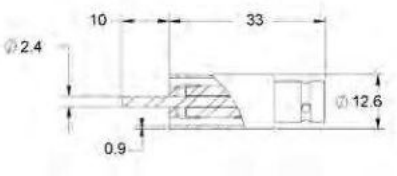
Standard BNC feedthroughs are a general purpose coaxial economic solution where defined impedance and high voltage are not required.

- 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)



Weldable BNC feedthrough

BNC feedthrough on a 16CF Flange

IVCX cables fit single sided BNC feedthroughs.

In Vacuum Coax cable (IVCX) with user end.

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

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

FLANGE	PINS	PART NUMBER
WELD	1	241-BNC
16CF	1	241-BNC-C16
40CF	1	241-BNC-C40
40CF	2	241-BNC-C40-2
40CF	3	241-BNC-C40-3
40CF	4	241-BNC-C40-4
16KF	1	241-BNC-K16
40KF	1	241-BNC-K40
40KF	2	241-BNC-K40-2
40KF	3	241-BNC-K40-3
40KF	4	241-BNC-K40-4
50KF	4	241-BNC-K50-4

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
1000 mm	1	380-IVCX-1000

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

FLANGE	PINS	PART NUMBER
WELD	1	241-BNCD
16CF	1	241-BNCD-C16
40CF	2	241-BNCD-C40-2
63CF	4	241-BNCD-C63-4
16KF	1	241-BNCD-K16
40KF	1	241-BNCD-K40

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
500 mm	1	380-BNC-MX-500
1000 mm	1	380-BNC-MX-1000
500 mm	2	380-BNC-MM-500
1000 mm	2	380-BNC-MM-1000

...BNC 50 Ohm types: Page 3.3.....High Voltage MHV Feedthroughs: Page 3.6.....

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
16CF	1	242-BNC50-C16
40CF	1	242-BNC50-C40
40CF	2	242-BNC50-C40-2
40CF	3	242-BNC50-C40-3
40CF	4	242-BNC50-C40-4
16KF	1	242-BNC50-K16
40KF	1	242-BNC50-K40
40KF	2	242-BNC50-K40-2
40KF	3	242-BNC50-K40-3
40KF	4	242-BNC50-K40-4

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
16CF	1	242-BNCD50-C16
40CF	2	242-BNCD50-C40-2
40CF	3	242-BNCD50-C40-3
16KF*	1	242-BNCD50-K16
40KF	2	242-BNCD50-K40-2

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
16CF	1 SINGLE	242-BNCF50-C16
40CF	2 SINGLE	242-BNCF50-C40-2
40CF	3 SINGLE	242-BNCF50-C40-3
WELD	1 DOUBLE	242-BNCDF50
16CF	1 DOUBLE	242-BNCDF50-C16
40CF	1 DOUBLE	242-BNCDF50-C40
40CF	2 DOUBLE	242-BNCDF50-C40-2

Air side connectors are included

KF version on request.

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

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

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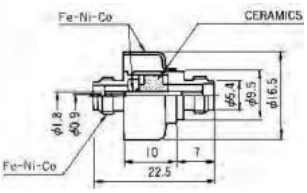
SMA 50 Ω Miniature Co-axial Feedthroughs

18GHz High Frequency version

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

Weldable SMA Feedthroughs:
- left- Single Sided Grounded Shield
- center- Double Sided Grounded Shield
- right- Double Sided Floating Shield



Dimensions of Floating and Grounded Shield Feed-through

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	AC to 6.5 GHz
Pin	1.8 mm ø, 5 mm long (single sided)
Weld-Ø	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
16CF	1	242-SMA50-C16
40CF	1	242-SMA50-C40
40CF	2	242-SMA50-C40-2
40CF	3	242-SMA50-C40-3
40CF	4	242-SMA50-C40-4

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
16CF	1	242-SMAD50-C16
40CF	1	242-SMAD50-C40
40CF	2	242-SMAD50-C40-2
40CF	3	242-SMAD50-C40-3
40CF	4	242-SMAD50-C40-4

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
16CF	1	242-SMADF50-C16
40CF	1	242-SMADF50-C40
40CF	2	242-SMADF50-C40-2
40CF	3	242-SMADF50-C40-3
40CF	4	242-SMADF50-C40-4

Versions on KF flanges are also available

High Frequency SMAD18G Series

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

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

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	50Ω
Frequency	DC to 18GHz
VSWR	1.1 + 0.01x f (GHz)
Connectors	Male SMA Plugs
Cable	311-KAP50/KAP50-S/18GHz cable

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

REDUCED

FLANGE	PINS	PART NUMBER
16KF	1	242-SMAD18G-K16
16CF	1	242-SMAD18G-C16
40CF	1	242-SMAD18G-C40
40CF	2	242-SMAD18G-C40-2
40CF	3	242-SMAD18G-C40-3
40CF	4	242-SMAD18G-C40-4

...SMA Cables: see page 3.5 .....40 GHz Microwave Feedthrough: Page 3.11.....

SMA Ready Made Cables

Allectra offers cables withMale (Plug) and Female (Socket) SMA connectors.
N.B. Male Plugs fit to Feedthroughs both Vacuum and Air Side.
Use Female UHV Socket Connectors for In-vacuum coaxial connections
Standard 50Ω Kapton coaxial cable is 311-KAP50
A thinner 50Ω version also available (311-KAP50S).
Cables are available with connectors on one end or on both ends. Standard lengths are 500 mm and 1 m, other lengths can be made on request. Mixed cables with other connectors can be made to order (e. g. SMA to BNC, Microdot, SHV, MHV etc.)

Specifications Standard SMA cables

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

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

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

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

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

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

Specifications 18GHZ SMA cables

NEW

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

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

NEW

LENGTH	IMPEDANCE	PART NUMBER
300 mm	50Ω	380-SMA18G-MM-300
500 mm	50Ω	380-SMA18G-MM-500

Custom lengths available on request

18 GHz cable

Please ask for the full data sheet

Specifications thin SMA cables

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

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

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

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

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

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

...Kapton 50 Ohm Coaxial wire: Sec. 6....Coax Connectors: Page 3.14...

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

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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

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

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

245-CON-MHV

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	241-MHV
16CF	1	241-MHV-C16
40CF	1	241-MHV-C40
40CF	2	241-MHV-C40-2
40CF	3	241-MHV-C40-3
40CF	4	241-MHV-C40-4

KF Versions are available on request

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

FLANGE	PINS	PART NUMBER
WELD	1	242-MHV50
16CF	1	242-MHV50-C16
40CF	1	242-MHV50-C40
40CF	2	242-MHV50-C40-2
40CF	3	242-MHV50-C40-3
40CF	4	242-MHV50-C40-4

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

FLANGE	PINS	PART NUMBER
WELD	1	242-MHVD50
16CF	1	242-MHVD50-C16
40CF	2	242-MHVD50-C40-2

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

FLANGE	PINS	PART NUMBER
WELD	1 SINGLE	242-MHVF50
16CF	1 SINGLE	242-MHVF50-C16
WELD	1 DOUBLE	242-MHVDF50
16CF	1 DOUBLE	242-MHVDF50-C16
40CF	1 DOUBLE	242-MHVDF50-C40

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
500 mm	1	380-MHV-MX-500
1000 mm	1	380-MHV-MX-1000
500 mm	2	380-MHV-MM-500
1000 mm	2	380-MHV-MM-1000

...Spare MHV Connectors: Page 3.14.....Copper Gaskets: Sec. 11...

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	AC to 1 GHz
Current	1 A max
Test-Voltage	500 V DC (Working: 250V RMS)
Test-Resistivity	>1GΩ (pins to ground)
Impedance	50Ω
Cable	311-KAP50 (Standard)/ 311-KAP50S
Pin-ø	0.5 mm (Single Sided)
Crimp pin	use 360-CRF-05 (Single Sided)

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

242-SMBD-C16

Specification SMB Cables

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

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

REDUCED

FLANGE	PINS	PART NUMBER
16CF	1	242-SMB-C16
40CF	1	242-SMB-C40
40CF	2	242-SMB-C40-2
40CF	3	242-SMB-C40-3
40CF	4	242-SMB-C40-4

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

REDUCED

FLANGE	PINS	PART NUMBER
16KF	1	242-SMB-K16
40KF	1	242-SMB-K40
40KF	2	242-SMB-K40-2
40KF	3	242-SMB-K40-3
40KF	4	242-SMB-K40-4

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

FLANGE	PINS	PART NUMBER
16CF	1	242-SMBD-C16
40CF	1	242-SMBD-C40
40CF	2	242-SMBD-C40-2
40CF	3	242-SMBD-C40-3
40CF	4	242-SMBD-C40-4

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

FLANGE	PINS	PART NUMBER
16KF	1	242-SMBD-K16
40KF	1	242-SMBD-K40
40KF	2	242-SMBD-K40-2
40KF	3	242-SMBD-K40-3
40KF	4	242-SMBD-K40-4

SMB In-Vacuum 50 Ohm Cables SMB to open end

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

...Spare SMB Connectors: Page 3.14.....Coax Cables: Sec. 6...

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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
Voltage	5000 V DC
Test-Resistivity	>1GΩ (pins to ground)
Impedance	not constant
Cable	RG59B/ U
Weld-ø	12.6 mm (18.85mm SHVD)

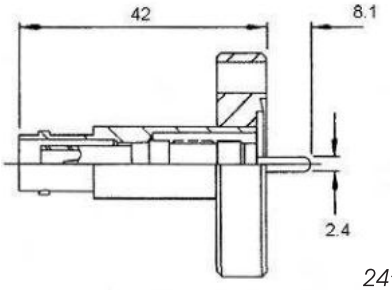
Air side connectors are included

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	241-SHV
16CF	1	241-SHV-C16
40CF	1	241-SHV-C40
40CF	2	241-SHV-C40-2
40CF	3	241-SHV-C40-3
40CF	4	241-SHV-C40-4

Versions on KF Flanges are also available



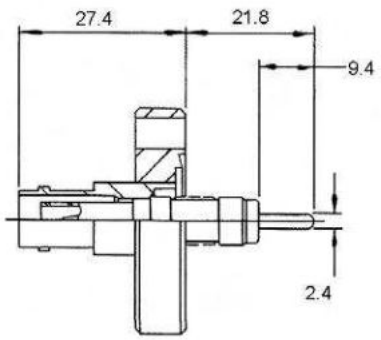
241-SHV-C16

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	241-SHVE
16CF	1	241-SHVE-C16
40CF	1	241-SHVE-C40
40CF	2	241-SHVE-C40-2
40CF	3	241-SHVE-C40-3
40CF	4	241-SHVE-C40-4

Versions on KF Flanges are also available



241-SHVE-C16

SHV 5KV Coaxial
DOUBLE SIDED - GROUNDED SHIELD

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	241-SHVD
16CF	1	241-SHVD-C16
40CF	1	241-SHVD-C40
40CF	2	241-SHVD-C40-2
40KF	1	241-SHVD-K40
40KF	2	241-SHVD-K40-2

Versions on KF Flanges are also available

...Spare SHV Connectors: Page 3.14.....Copper Gaskets: Sec. 11...

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 SHV50Ω

Type	242-SHV50
Vacuum	UHV
Pin-ø	1.65mm
Leak rate	<5x10^{-10} mbar l/s
Temp.	-200°C to 300°C
Current	5A max
Voltage	6000V DC
Test-Resistivity	>1GΩ (pins to ground)
Impedance	50Ω
Frequency range	AC to 100 MHz
Connector (air)	use 241-CON-SHV-RG58
Connector (vac)	use 360-PIC-1.8
Weld-ø	9.65 mm / double sided: 17.5 mm

Air side connectors are not included

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

40CF Flange with Grounded and Floating Shield SHV

Female - Male?

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

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

FLANGE	PINS	PART NUMBER
WELD	1	242-SHV50
16CF	1	242-SHV50-C16
40CF	1	242-SHV50-C40
40CF	2	242-SHV50-C40-2
40CF	3	242-SHV50-C40-3
40CF	4	242-SHV50-C40-4

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
40CF	1	242-SHVD50-C40
40CF	2	242-SHVD50-C40-2
40CF	3*	242-SHVD50-C40-3

*) 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
40CF	1	242-SHVDF50-C40
40CF	2	242-SHVDF50-C40-2
40CF	3*	242-SHVDF50-C40-3

*) 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-SHV-FX-500
100 0mm	1	380-SHV-FX-1000

SHV 50 Ω Air side connector

CONNECTOR	FOR CABLE	PART NUMBER
SHV 50Ω	RG58	241-CON-SHV-RG58

...Air Side Connectors: Page 3.14.....Vacuum Side Connectors: Sec. 4...

DE: Info@allectra.com
UK: uk@allectra.com
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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
Voltage	10KV DC
Impedance	not constant
Weld-ø	12.6 mm

Air side connector INCLUDED (for RG58 cable)

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	250-SHV10
16CF	1	250-SHV10-C16
40CF	1	250-SHV10-C40
40CF	2	250-SHV10-C40-2
40CF	3	250-SHV10-C40-3
40CF	4	250-SHV10-C40-4

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

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	250-SHVE10
16CF	1	250-SHVE10-C16
40CF	1	250-SHVE10-C40
40CF	2	250-SHVE10-C40-2
40CF	3	250-SHVE10-C40-3
40CF	4	250-SHVE10-C40-4

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
Voltage	20KV DC
Impedance	not constant
Weld-ø	15.8 mm

Air side connector INCLUDED (for RG213 cable)

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	250-SHV20
16CF	1	250-SHV20-C16
40CF	1	250-SHV20-C40
40CF	2	250-SHV20-C40-2

Weld version - 20 KV 250-SHV20

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

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	250-SHVE20
16CF	1	250-SHVE20-C16
40CF	1	250-SHVE20-C40
40CF	2	250-SHVE20-C40-2

...Multi-way High Voltage F/T's: Sec. 4....Other High Voltage F/T's: Sec. 4...

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.

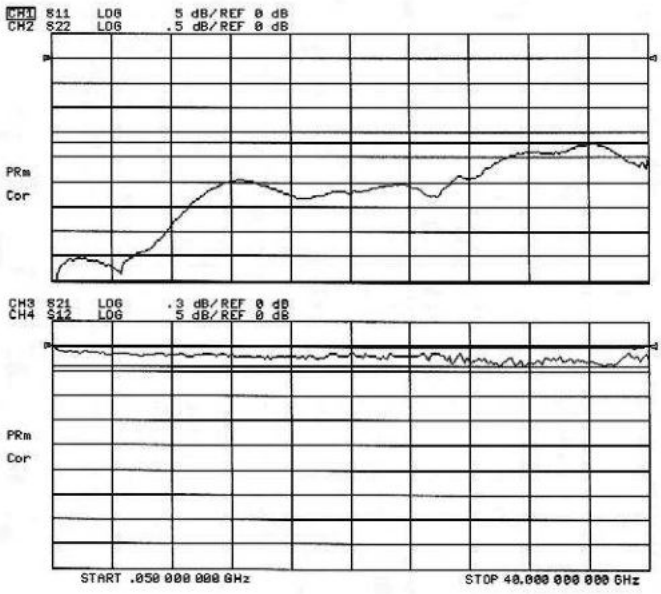
Specification 242-SMAD40G

Vacuum	down to 10^{-9} mbar (O-ring sealed)
Leak rate	< 8x 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)

2.92 mm K Type Microwave Feedthroughs 40GHz DOUBLE SIDED

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

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.

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

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

...Standard SMA Feedthroughs: Page 3.4.....

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

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50Ω Type N and 7/16 Feedthroughs

Ready made In-Vacuum Cables

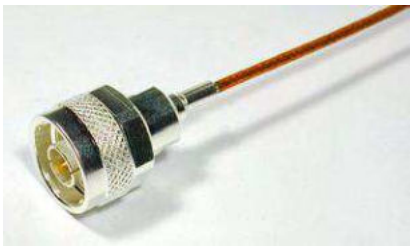
- Includes Screw-on Air Side Connector
- High Frequency signals to 200MHz
- Grounded & Floating Shield types
- Single & Double Sided

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

General Specifications N-Type

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

242-NDF50
245-CON-N



Ready made N-Type cable for Vacuum use

7/16 High power double sided feedthrough on KF50 flange

Type N Feedthrough
SINGLE SIDED - GROUNDED shield

FLANGE	PINS	PART NUMBER
WELD ø16mm	1	242-N50
16CF	1	242-N50-C16
40CF	1	242-N50-C40
40CF	2	242-N50-C40-2

Type N Feedthrough
DOUBLE SIDED versions - GROUNDED shield

FLANGE	PINS	PART NUMBER
WELD ø24mm	1	242-ND50
40CF	1	242-ND50-C40
63CF	2	242-ND50-C63-2
63CF	3	242-ND50-C63-3

Type N Feedthrough
DOUBLE SIDED versions - FLOATING shield

FLANGE	PINS	PART NUMBER
WELD ø24mm	1	242-NDF50
40CF	1	242-NDF50-C40
63CF	2	242-NDF50-C63-2
63CF	3	242-NDF50-C63-3

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

LENGTH	SOCKETS	PART NUMBER
NONE	1	245-CON-N
500 mm	1	380-N50-MX-500
1000 mm	1	380-N50-MX-1000

General Specifications 7/16

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

Type 7/16 Coaxial Feedthrough
Double Sided - High Vacuum

NEW

ITEM	PART NUMBER
7/16 Feedthrough 50KF	242-7_16-K50
Vac. side connector RG393	245-CON-7_16-RG393
Air side connector RG213	241-CON-7_16-RG213

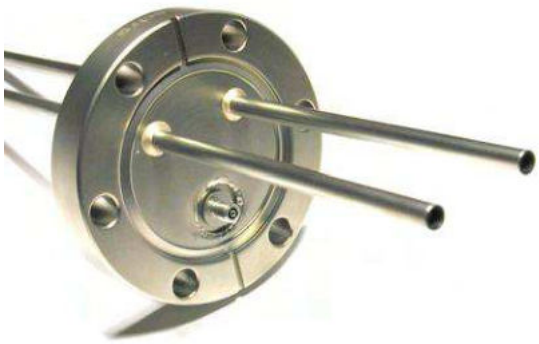
RG-393/U cable (PFTE) available on request

...Kapton Co-axial wire: Sec. 6 .....Ready Made Cables: Sec. 6...

Microdot Crystal Sensor Feedthroughs

Vacuum Ready Cables for use with Film Thickness Monitors

Between Series Feedthroughs are offered with Microdot on the vacuum Side and BNC on the Air Side.
The Feedthroughs include optionally 2 or 3 water cooling pipes.
Cables are also offered with combinations of Microdot to Microdot, BNC or SMA Connectors



Specification Between Series - Microdot/ BNC

Compact Coaxial Threaded Feedthrough

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

Microdot crystal sensor Feedthrough Between series Microdot to BNC

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	243-MDOT-BNC
16CF	1	243-MDOT-BNC-C16
40CF	1	243-MDOT-BNC-C40
16KF	1	243-MDOT-BNC-K16

Air side connectors are not included

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

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

COAX	WATER	PART NUMBER
1	2	710-BNC1-W2-C40
1	3	710-BNC1-W3-C40
2	2	710-BNC2-W2-C40
2	3	710-BNC2-W3-C40

Versions on KF flanges available on request

710-IVC-750

Microdot crystal sensor Feedthrough In-vacuum Cables

LENGTH	SOCKETS	PART NUMBER
250 mm	2	710-IVC-250
750 mm	2	710-IVC-750
910 mm	2	710-IVC-910

Microdot In-Vacuum Cables Microdot to Open End or SMA

LENGTH	SOCKETS	PART NUMBER
NONE	1xMIC	245-CON-MIC
500 mm	1xMIC	380-MIC-MX-500
500 mm	2xMIC	380-MIC-MM-500
500 mm	1x MIC+1xSMA	380-MIC-SMA-500
500 mm	1x MIC+1xBNC	380-MIC-BNC-500
+500 mm		380-SMA-EXT05

Extention for 500 mm and more

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

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

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Vacuum Side Plugs & Sockets for Coaxial Feedthroughs

Air Side Connectors

This page summarizes all the different Vacuum Side connectors for coaxial feedthroughs.
For SMA Feedthroughs, a wide variation of Vacuum Connectors are offered as well as Air Side types.

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

Specifications: Vacuum Plugs & Sockets

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

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

TYPE	FOR CABLE	PART NUMBER
STR	KAP50	245-CON-SMA-V2
STR	KAP50	245-CON-SMA-1
STR CER*	KAP50	245-CON-SMA-CER
STR SMALL	KAP50S	245-CON-SMA-S
90°	KAP50	245-CON-SMA-90
STR NM	KAP50	245-CON-SMA-NM
90° NM	KAP50	245-CON-SMA-90-NM
Female	KAP50	245-CON-SMA-F
Female CER*	KAP50	245-CON-SMA-CER-F

* not 50Ω

Various Vacuum Side connectors:

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

245-CON-SMA-F (female)

Vacuum Side Sockets Fit to double sided Feedthroughs

F/T	FOR CABLE	PART NUMBER
BNC(50)	KAP50	245-CON-BNC
BNC(50)	KAP50S	245-CON-BNC-S
MHV(50)	KAP50	245-CON-MHV
SHV	KAP50	245-CON-SHV
N	KAP50	245-CON-N
MICRODOT	KAP50	245-CON-MIC
SMB	KAP50	245-CON-SMB
SMB	KAP50S	245-CON-SMB-S
7/16	RG58	245-CON-7_16-RG58
7/16	RG393/213/214	245-CON-7_16-RG393

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

245-CON-MHV
(female connector)

245-CON-SHV

245-CON-N

Air Side Connectors Fit to Feedthroughs

F/T	FOR CABLE	PART NUMBER
SMA	RG174	241-CON-SMA-RG174
BNC	RG58	241-CON-BNC-RG58
SMB	RG174	241-CON-SMB-RG174
MHV	RG59	241-CON-MHV-RG58
SHV	RG59	241-CON-SHV-RG59
SHV 50 Ω	RG58	241-CON-SHV-RG58
SHV-10	RG58C	241-CON-SHV10
SHV-20	RG213	241-CON-SHV20
N50/N	RG58	241-CON-N-RG58
N50/N	RG213	241-CON-N-RG213
7/16	RG213	241-CON-7_16-RG213

...SMA Feedthroughs: Page 3.4 .....SMA Ready Made Cables: Sec. 6...

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

4.1 POWER: LOW VOLTAGE TO 1KV -> Page 4.2

Molybdenum, Stainless Steel and Copper Conductors

4.2 POWER – 5KV up to 20 A -> Page 4.3

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

4.3 HIGH CURRENT UP TO 1000A -> Page 4.5

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

4.4 MULTI-WAY WITH MS SOCKETS -> Page 4.6

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

4.5 12KV WITH MS SOCKETS -> Page 4.7

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

4.6 POWER GLOVE 5KV TO 20KV -> Page 4.8

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

4.7 HIGH VOLTAGE -> Page 4.10

Individual High Voltage Feedthroughs with fluted or straight ceramics

4.8 POWER: BASEPLATE TYPES -> Page 4.11

1" (25.4mm) Baseplate Feedthroughs- various types

4.9 CERAMIC BREAKS -> Page 4.12

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

4.10 POWER: CONNECTORS -> Page 4.14

Crimps, Push-ons, Screw-ons and Clamps

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

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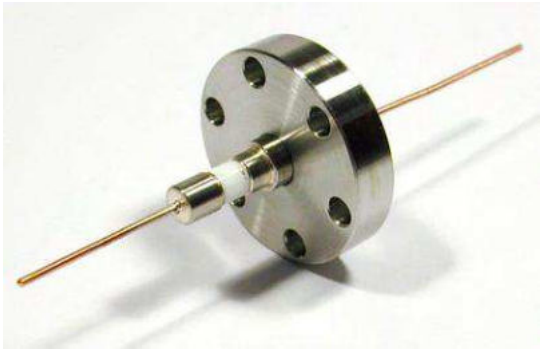
Power Feedthroughs – low voltage types 500V & 1KV

- 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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	261-08MO500
WELD	2	264-08MO500-2
WELD	4	264-08MO500-4
WELD	8	264-08MO500-8
16CF	2	264-08MO500-2-C16
16CF	4	264-08MO500-4-C16
16CF	8	264-08MO500-8-C16

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 vers. Kovar rated 7A)

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	261-13SS1K
WELD	2	264-13SS1K-2
WELD	4	264-13SS1K-4
WELD	8*	264-13KO1K-8
16CF	2	264-13SS1K-2-C16
16CF	4	264-13SS1K-4-C16
16CF	8*	264-13KO1K-8-C16
16KF	2	264-13SS1K-2-K16
16KF	4	264-13SS1K-4-K16
16KF	8*	264-13KO1K-8-K16

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

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

1KV 20A Copper Conductor Conductor 1.3 mm

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	261-13CU1K
WELD	2	264-13CU1K-2
WELD	4	264-13CU1K-4
WELD	8	264-13CU1K-8
16CF	2	264-13CU1K-2-C16
16CF	4	264-13CU1K-4-C16
16CF	8	264-13CU1K-8-C16
16KF	2	264-13CU1K-2-K16
16KF	4	264-13CU1K-4-K16
16KF	8	264-13CU1K-8-K16

Note: also available with Nickel (7A) conductors

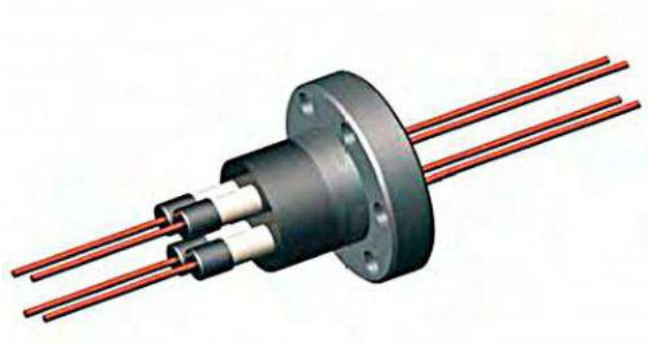
CRYOGENIC OPTION: Versions with Constantan Pins for use at liquid Helium temperature are available. The current rating is 2A. Please ask for details.

... Crimp pins: Page 4.4...Copper Gaskets: Sec. 11...

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

5KV 20A Copper Conductor Conductor 1.3 mm

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	261-13CU5K
WELD	2	264-13CU5K-2
WELD	4	264-13CU5K-4
16CF	2	264-13CU5K-2-C16
16CF	4	264-13CU5K-4-C16
16KF	2	264-13CU5K-2-K16
16KF	4	264-13CU5K-4-K16

5KV 7A Nickel Conductor Conductor 1.3 mm

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	261-13NI5K
WELD	2	264-13NI5K-2
WELD	4	264-13NI5K-4
16CF	2	264-13NI5K-2-C16
16CF	4	264-13NI5K-4-C16
16KF	2	264-13NI5K-2-K16
16KF	4	264-13NI5K-4-K16

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

5KV 1A Stainless Steel Conductor Conductor 1.3 mm

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	261-13SS5K
WELD	2	264-13SS5K-2
WELD	4	264-13SS5K-4
16CF	2	264-13SS5K-2-C16
16CF	4	264-13SS5K-4-C16
16KF	2	264-13SS5K-2-K16
16KF	4	264-13SS5K-4-K16

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

...Crimps: Page 4.14 .....5KV Power Glove: Page 4.8.....

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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 <5x10^{-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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	261-24CU5K
16CF	1	261-24CU5K-C16
16CF	2	264-24CU5K-2-C16
40CF	4	264-24CU5K-4-C40
40CF	8	264-24CU5K-8-C40
40CF	12	264-24CU5K-12-C40
16KF	1	261-24CU5K-K16
16KF	2	264-24CU5K-2-K16
40KF	4	264-24CU5K-4-K40
40KF	8	264-24CU5K-8-K40
40KF	12	264-24CU5K-12-K40

Note: also available with Nickel (15A) conductors

General Specification 10KV types

Vacuum	UHV (leak rate <5x10^{-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

REDUCED

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

Note: also available with Nickel (15A) conductors

261-24CU10K

5KV 100A Copper Conductor Conductor 4 mm

FLANGE	PINS	PART NUMBER
WELD	1	261-40CU5K
16CF	1	261-40CU5K-C16
40CF	1	261-40CU5K-C40
40CF	2	261-40CU5K-2-C40
25KF	1	261-261-40CU5K-K25
40KF	2	264-261-40CU5K-2-K40

Note: also available with Nickel (30A) conductors

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

...360-CRIMP-2.4: Page 4.14.....5KV Power Glove : Page 4.8.....

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 <5x10^{-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-PPO-6.6 / 360-PPO-6.4

5KV 150A Copper Conductor
Conductor 6.35 mm ø

REDUCED

FLANGE	PINS	PART NUMBER
16CF	1	261-63CU5K-C16
40CF	2	264-63CU5K-2-C40
40CF	3	264-63CU5K-3-C40
40CF	4	264-63CU5K-4-C40
16KF	1	261-63CU5K-K16
40KF	2	264-63CU5K-2-K40
40KF	3	264-63CU5K-3-K40
40KF	4	264-63CU5K-4-K40

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

Specification 3KV 250A types

Vacuum	UHV (leak rate <5x10^{-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

REDUCED

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

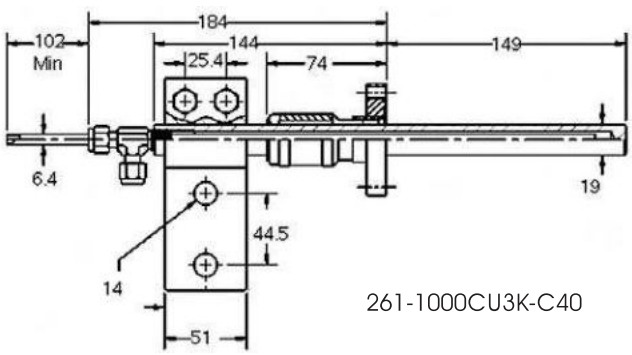
Specification 3KV 600A types

Vacuum	UHV (leak rate <5x10^{-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

REDUCED

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



261-1000CU3K-C40

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

REDUCED

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

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

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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/ 360-CRBC-1.4

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

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

REDUCED

FLANGE	PINLENGTH	PINS	PART NUMBER
16CF	66.5	4	221-10AL700-4-C16
16CF	66.5	6	221-10AL700-6-C16
40CF	78	6	221-10AL700-6-C40
16CF	66.5	10	221-10AL700-10-C16
40CF	78	10	221-10AL700-10-C40
40CF	87	20	221-10AL700-20-C40
40CF	52	35	221-10AL700-35-C40
16KF	66.5	4	221-10AL700-4-K16
16KF	66.5	6	221-10AL700-6-K16
16KF	66.5	10	221-10AL700-10-K16
40KF	88	20	221-10AL700-20-K40
40KF	51	35	221-10AL700-35-K40

Note: all MS types are also available double sided

Note: available as weldables to order

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 Cond. 2.4 mm includes MS Circular Air Side Socket

REDUCED

FLANGE	PINS	PART NUMBER
40CF	2	221-23CU700-2-C40
40CF	3	221-23CU700-3-C40
40CF	4	221-23CU700-4-C40
40CF	5	221-23CU700-5-C40
40CF	7	221-23CU700-7-C40
40CF	8	221-23CU700-8-C40

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 Cond. 3.6mm includes MS Circular Air Side Socket

REDUCED

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

Note: available as weldables to order

Note: also available with Nickel (25A) conductors

...MS Socket Thermocouple Feedthroughs: Sec. 5.....Crimps: Page 4.14 .....

High voltage12KV 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

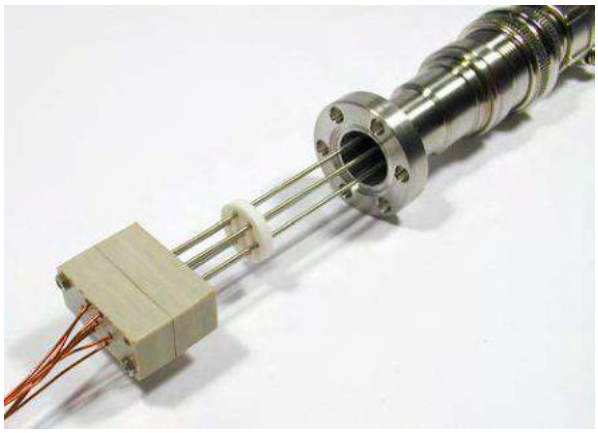
12KV 7.5A Multi-way 2 to 7 conductors, 1.3 mm includes MS circular air side socket

REDUCED

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

Crimps Berylium Copper For Conductor 1.3 mm

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



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.

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

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

Crimp pins are included

...Full range of Crimps: Page 4.14...Other High Voltage Feedthroughs: Page 4.9...

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Power Glove Feedthroughs 5KV to 10KV

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

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

Vacuum	UHV
Pin-ø	2.4 mm
Pin material	Cu, Ni or SS
Air cable	High Voltage Power Glove 2.4m
Leak rate	<5 x 10^{-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: 15A max per pin
	SS: 1A max per pin
Connectors	360-CRIMP-2.4 / 360-PPO-2.4
Weld-ø	11 mm

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	265-025CU5K
16CF	1	265-025CU5K-C16
40CF	2	265-025CU5K-2-C40
40CF	4	265-025CU5K-4-C40

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	265-015NI5K
16CF	1	265-015NI5K-C16
40CF	2	265-015NI5K-2-C40
40CF	4	265-015NI5K-4-C40

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

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	265-001SS5K
16CF	1	265-001SS5K-C16
40CF	2	265-001SS5K-2-C40
40CF	4	265-001SS5K-4-C40

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

REDUCED

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

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

REDUCED

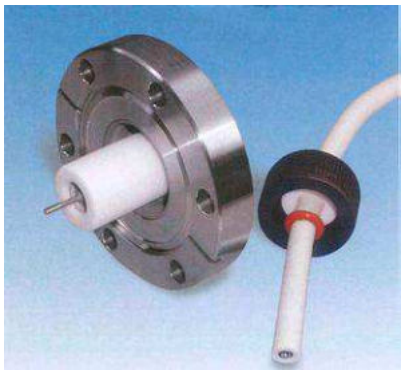
FLANGE	PINS	PART NUMBER
WELD	1	265-025CU10K
16CF	1	265-025CU10K-C16
40CF	2	265-025CU10K-2-C40
40CF	4	265-025CU10K-4-C40

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

...Full range of Sockets and Crimps Connectors: Page 4.14...

Power Glove Feedthroughs 20KV to 40KV

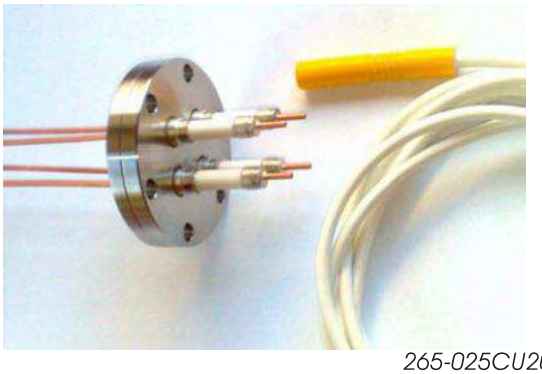
Power Glove High Voltage Feedthroughs include an Air Side insulating cover and 2.4 m of High Voltage Cable
Power Glove Feedthroughs are available with Copper, Nickel or Stainless Steel conductors.
It is the users responsibility to ensure that electrical components are used in accordance with local regulations.



40KV Feedthrough with Cable

Specification 20KV Power Glove

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



265-025CU20K-4-C40

265-001SS20K-C40

Specification 40KV with cable

Vacuum	UHV
Materials	Straight Ceramic/SS
Leak rate	<5 x 10^{-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 cond. 25A includes 2.4 m Air side cable

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	265-025CU20K
16CF	1	265-025CU20K-C16
40CF	2	265-025CU20K-2-C40
40CF	4	265-025CU20K-4-C40

Air side cable for Power Glove Feedtroughs

LENGTH	VOLTAGE	PART NUMBER
2.4 m	5 KV	265-CAB-5K
2.4 m	20 KV	265-CAB-20K*

* also useable for 10KV

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	265-015NI20K
16CF	1	265-015NI20K-C16
40CF	2	265-015NI20K-2-C40
40CF	4	265-015NI20K-4-C40

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	265-001SS20K
16CF	1	265-001SS20K-C16
40CF	2	265-001SS20K-2-C40
40CF	4	265-001SS20K-4-C40

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

REDUCED

FLANGE	PINS	PART NUMBER
WELD	1	265-007SS40K
40CF	1	265-007SS40K-C40
40KF	1	265-007SS40K-K40

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

.... Push-on & Crimps Page 4.14...Gaskets and Screws Sec. 11 ...

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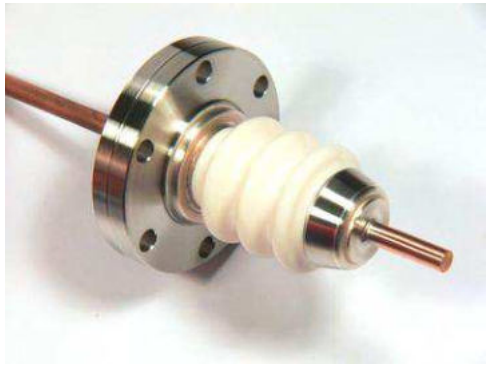
High Voltage Feedthroughs – other types

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 and Copper conductor Conductor 6.35 mm Fluted Ceramic

REDUCED

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

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 and Copper cond. Conductor 2.4 mm

REDUCED

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

Specification 30KV 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	30KV, 50A (max. 5KV pin to pin)
Pin	2 x copper, 2.4 mm
Connector	360-PPO-2.4
Air Side	Threaded connection 1/4-28

30KV 50A Feedthrough - 2 PIN Conductors 2.4 mm

REDUCED

FLANGE	COND.	PART NUMBER
40CF	CU	266-050CU30K-2-C40

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

REDUCED

FLANGE	PINS	PART NUMBER
63CF	1	266-003SS60K-C63

....Crimps and Clamps: Page 4.14.....Tube Feedthroughs: Page 4.13.....

Baseplate Feedthroughs

Baseplate Feedthroughs are designed to fit through a 1"(25.4mm) hole and seal by compressing an O-Ring between 2 nuts.
Applications for these Feedthroughs include High Vacuum Coaters. Many of our Feedthroughs can be supplied as Baseplate types. This page shows a selection of those which are available.

General Specification OCTAL type

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

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

REDUCED

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

264-13CU1K-2-BP

Specification 1KV 20A Baseplate Feedthrough

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

8 way Feedthrough has optionally SS tube or Ni conductors

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

REDUCED

SIZE	PINS	PART NUMBER
1" BOLT	2	264-13CU1K-2-BP
1" BOLT	4	264-13CU1K-4-BP
1" BOLT	8	264-13CU1K-8-BP

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

261-198CU3K-BP

Specification 250 A BP Feedthrough

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

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

REDUCED

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

261-1000WC-BP

Specification 1000 A BP Feedthrough

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

1000A Water Cooled Baseplate Feedthrough includes vacuum side clamping screw

REDUCED

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

See page 52 for vacuum Side Crimps

...Crimps & Push-ons: Page 4.14 .....

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High Voltage Cryogenic and Vacuum Breaks

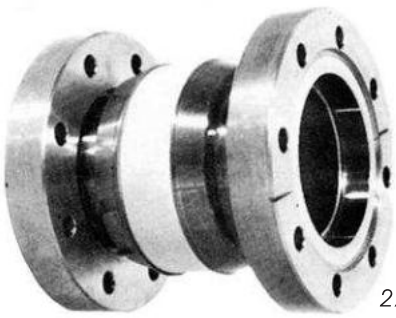
- Small Tube Size Breaks for Gas and Liquid lines
- Cryogenic versions for use with Liquid Nitrogen
- Large sizes for System Isolation

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_2O_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-10K-59-C63

271-CB-35K-85-C100

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

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

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

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

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

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

FLANGE	LENGTH	PART NUMBER
38.1mm ø	97	271-CB30K-32
40CF	107	271-CB30K-32-C40
40KF	104	271-CB30K-32-K40

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

FLANGE	LENGTH	PART NUMBER
19mm ø	67	271-CB15K-16
16CF	92	271-CB15K-16-C16
16KF	92	271-CB15K-16-K16

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

FLANGE	LENGTH	PART NUMBER
19mm ø	117	271-CB30K-16
16CF	117	271-CB30K-16-C16
16KF	117	271-CB30K-16-K16

35KV Vacuum breaks
60 mm long fluted ceramic

FLANGE	LENGTH	PART NUMBER
101mm ø	118	271-CB35K-85
100CF	135	271-CB35K-85-C100

...CF Flexible Couplings: Sec. 11 .....

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

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

273-CSO-10-10

273-CSO-50-20

Specification Ceramic Stand-off Isolators

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

Ceramic Stand-off isolators height excludes screws

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

Tube Feedthroughs

Tube feedthroughs can be used to carry both current and water ro 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

REDUCED

FLANGE	No. OF TUBES	PART NUMBER
16CF	1	272-TU6SS5K-C16
40CF	2	272-TU6SS5K-2-C40
40CF	3	272-TU6SS5K-3-C40
40CF	4	272-TU6SS5K-4-C40

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

10KV to 40KV Vacuum Breaks Straight Ceramic, Weldable Versions

REDUCED

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

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, with CF Flanges

REDUCED

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

...Viton and PTFE hose: Sec. 6....Ceramic tubes: Sec. 6...

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Crimps, Connectors and Sockets

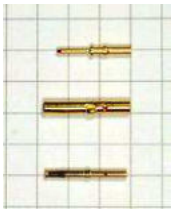
A full range of Crimps , Push-ons and Screw-on Connectors for electrical connection to the Air or Vacuum Side of Power Feedthroughs are offered.

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

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
0.7 - 0.8 mm	10	360-CRF-07-10
1.0 mm	10	212-PINF-10
1.0 mm	25	212-PINF-25
1.3 - 1.5 mm	5	360-CRIMP-1.3
2.3 - 2.4 mm	5	360-CRIMP-2.4



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
1.3	16.0	3.7	Au plated Cu

Male Crimps to fit Female Crimps Gold Plated Copper alloy

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

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

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
1.3 mm	10	360-CRBC-1.3
1.6 mm	10	360-CRBC-1.6

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

Power Push-ons with Allen Screw Beryllium Copper

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

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

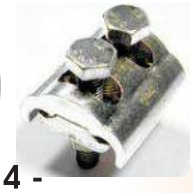
Power Push-on with M5 screw and nut Silver plated copper alloy

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

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
3.0	16.0	6.3	BeCu
6.6	25.4	12.7	BeCu

Power In-line Screw-on Sockets Beryllium Copper

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



Wire ØMax	Material
-	Cu Ag plated
-	Cu

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

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

...Power Feedthroughs: Pages 4.2-4.11 ...PTFE Shrink hose: Sec. 6...

Thermocouple Feedthroughs, High Current, Combinations, Sockets and Wires

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

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

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

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

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

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

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

Thermocouple Feedthrough with MS Air Side Sockets

5.5 T/C Air Side Crimps -> Page 5.8

Thermocouple Sockets
Screw & Nut Sets
Thermocouple Crimps

Type	(+) Material	(-) Material	EMV µV/K	Temp Range	Socket Col.	Remarks
K	Chromel® Ni-Cr	Alumel® Ni-Al	41	-200°C... 1250°C	Yellow	Most commom, (-) 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

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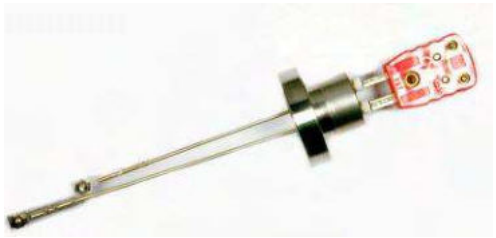
Thermocouple Feedthroughs Type K, C and N

Thermocouple feedthroughs have pins made from the corresponding thermocouple pair materials.
On the vacuum side the pins terminate with a screw connector (included). The (+) pole is 25 mm shorter than the (-) pole.
Miniature T /C Connectors are included for the Air Side. The Type-N feedthroughs use screw connectors for air and vacuum side similar to R/ S types (see page 56)

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

Vacuum	UHV
Pin material	Type K,C* or N T/C
Pin length	(+) pole 25mm shorter than (-)pole
Leak rate	<5 x 10^{-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 (short) Chromel
	- pole (long) Alumel
Air side colour:	yellow
C Type	
Temp. Range	0°C to 2320°C
Pin length	+ pole (short)
	- pole (long)
Air side colour:	red
N Type	
Temp. Range	-250°C to 1300°C
Pin length	+ pole (short) Nicrosil
	- pole (long) Nisil
	screw connectors

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

REDUCED

FLANGE	No OF PAIRS	PART NUMBER
16CF	1	262-TCK-1-C16
16CF	2	262-TCK-2-C16
16CF	3	262-TCK-3-C16
40CF	4	262-TCK-4-C40
40CF	5	262-TCK-5-C40
16KF	1	262-TCK-1-K16
16KF	2	262-TCK-2-K16
16KF	3	262-TCK-3-K16
40KF	4	262-TCK-4-K40
40KF	5	262-TCK-5-K40

Also available as weldables

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

REDUCED

FLANGE	No OF PAIRS	PART NUMBER
16CF	1	262-TCC-1-C16
16CF	2	262-TCC-2-C16
16CF	3	262-TCC-3-C16
40CF	4	262-TCC-4-C40
40CF	5	262-TCC-5-C40
16KF	1	262-TCC-1-K16
16KF	2	262-TCC-2-K16
16KF	3	262-TCC-3-K16
40KF	4	262-TCC-4-K40
40KF	5	262-TCC-5-K40

Also available as weldables

Thermocouple Feedthroughs TYPE N 1 to 5 pairs including screw connectors

REDUCED

FLANGE	No OF PAIRS	PART NUMBER
16CF	1	262-TCN-1-C16
16CF	2	262-TCN-2-C16
16CF	3	262-TCN-3-C16
40CF	4	262-TCN-4-C40
40CF	5	262-TCN-5-C40
16KF	1	262-TCN-1-K16
16KF	2	262-TCN-2-K16
16KF	3	262-TCN-3-K16
40KF	4	262-TCN-4-K40
40KF	5	262-TCN-5-K40

Also available as weldables

...Type R ,S & T thermocouples: Page 5.4 .....Air side sockets: Page 5.8 .....

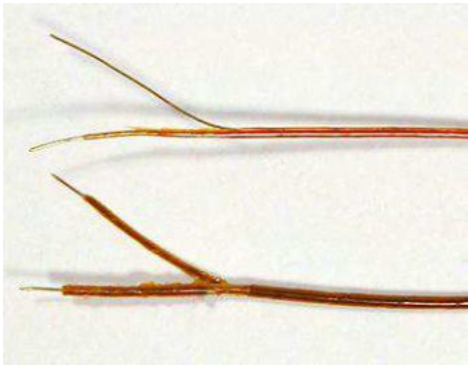
Thermocouple Wires Type K / N / C

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-1M
K	5 m	312-KAP-TCK-5M
K	10 m	312-KAP-TCK-10M
N	1 m	312-KAP-TCN-1M
N	5 m	312-KAP-TCN-5M
N	10 m	312-KAP-TCN-10M

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-1M
K	5 m	311-KAP-TCK-5M
K	10 m	311-KAP-TCK-10M

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
C	30 cm	313-TCC-013*
N	1 m	313-TCN-025

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-1M
K	5 m	312-PTFE-TCK-5M
K	10 m	312-PTFE-TCK-10M

Type K Kapton Isolated Thermocouple wires with welded tip junction

TIP INSULATED	LENGTH	PART NUMBER
no	1 m	311-KAP-TCK-1-L
yes (PTFE)	1 m	311-KAP-TCK-1-X

also available in 2m length

... Resistance Thermometers PT100: Sec. 6 ..... TC Crimps: Page 5.8 .....

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Thermocouple Feedthroughs Type R/ S/ T

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

In addition to the popular K, N and C thermocouples, Allectra offers the special purpose R, S and T types.
Types R and S share the same feedthrough pin material and the same F/T may be used in both cases.
Type T is particularly suitable for cryogenic applications.
Additionally types E and J are available to order.

General Specification 262-TC (R or S)

Vacuum	UHV	
Pin material	R – extension grade	
Pin length	+ pole 25mm shorter than -pole	
Leak rate	< 5 x 10^{-10} mbar l/s	
Temp.	-200°C to 450°C	
Test-Resistivity	>1GΩ (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 (short)
	R: Pt 13% Rh, S:Pt 10% Rh
	- pole (long)
	R and S: Pt

(F/T uses extension grade material)

T Type

Temp.	-200°C to 350°C
Pin length	+ pole (short) Cu
	- pole (long) Constantan

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

Vacuum	UHV
Material	Bare TC wire
Wire-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

REDUCED

FLANGE	No OF PAIRS	PART NUMBER
16CF	1	262-TCR-1-C16
16CF	2	262-TCR-2-C16
16CF	3	262-TCR-3-C16
40CF	4	262-TCR-4-C40
40CF	5	262-TCR-5-C40
16KF	1	262-TCR-1-K16
16KF	2	262-TCR-2-K16
16KF	3	262-TCR-3-K16
40KF	4	262-TCR-4-K40
40KF	5	262-TCR-5-K40

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
R	0.25 mm	313-TCR-025
S	0.13 mm	313-TCS-013
S	0.25 mm	313-TCS-025

Note: Wires with junction made available on request

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

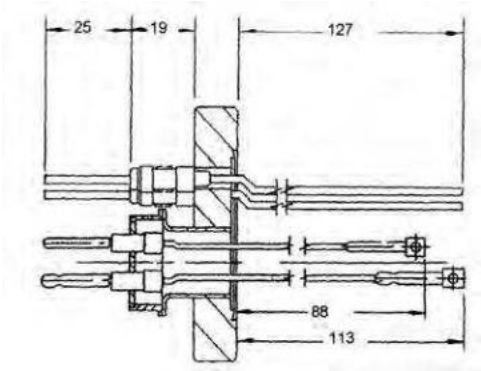
T/C TYPE	DIAMETER	PART NUMBER
K	0.25 mm	313-TCK-JOINT
C	0.25 mm	313-TCC-JOINT
N	0.25 mm	313-TCN-JOINT

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 - REDUCED

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

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

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

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

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

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

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

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

... 360-PPO Power Push-on: Page 52 ..... T/C Crimps: Page 60 .....

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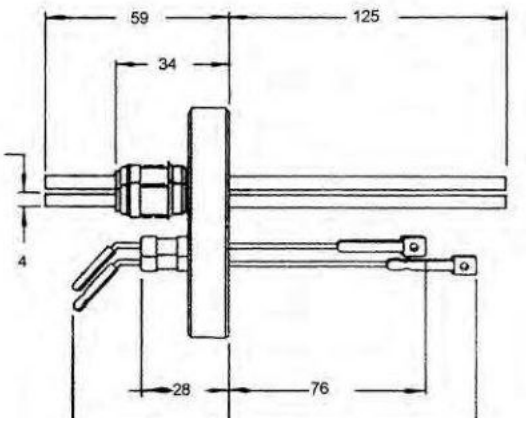
Combination Power/ Thermocouple Feedthroughs-High Current Types

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



263-TCK-1-CU60-2-C40

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

REDUCED

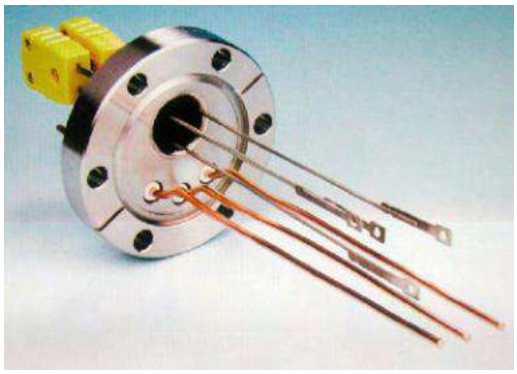
MAX AMPS	T/C TYPE	PART NUMBER
3 x 60A	K	263-TCK-1-CU60-3-C40
3 x 60A	C	263-TCC-1-CU60-3-C40
2 x 150A	K	263-TCK-1-CU150-2-C40
2 x 150A	C	263-TCC-1-CU150-2-C40

263-TCK-1-CU150-2-C40

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

REDUCED

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



263-TCK-2-CU60-3-C40

...360-PPO Power Push-on Sockets: Sec. 4.....T/C Crimps: Page 5.8 .....

Thermocouple Feedthroughs with MS Circular Sockets

The MS circular connector is a very robust industrial grade socket. Up to 10 pairs of K type thermocouples are available in one MS style feedthrough.
Air Side MS Connector included.
Vacuum side crimp pins available - on page 60.
Double sided types with MS Sockets on the air and vacuum side are available to order.

General Specification 263-TCK-MS

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

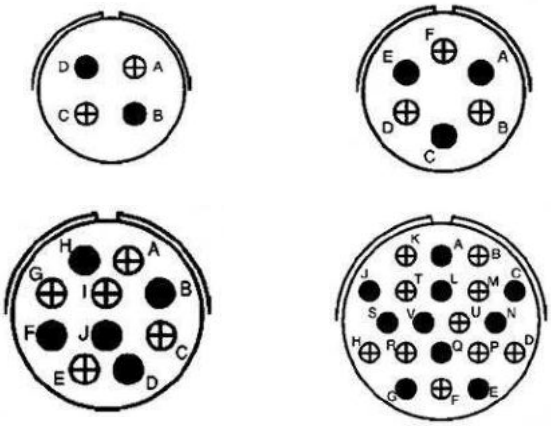
Thermocouple F/T with MS Circular Air Side Sockets Type K

REDUCED

FLANGE	No OF PAIRS	PART NUMBER
16CF	2	263-TCK-MS-2-C16
16CF	3	263-TCK-MS-3-C16
16CF	5	263-TCK-MS-5-C16
40CF	2	263-TCK-MS-2-C40
40CF	3	263-TCK-MS-3-C40
40CF	5	263-TCK-MS-5-C40
40CF	10	263-TCK-MS-10-C40
16KF	2	263-TCK-MS-2-K16
16KF	3	263-TCK-MS-3-K16
16KF	5	263-TCK-MS-5-K16
40KF	2	263-TCK-MS-2-K40
40KF	3	263-TCK-MS-3-K40
40KF	5	263-TCK-MS-5-K40
40KF	10	263-TCK-MS-10-K40

Note 1 : also available as weldables
Note 2 : also available as double sided versions
Note 3: also available for T/C types E and J

263-TCK-MS-2-C16



Polarity for TC Pins
View from the Air Side,
Black Pins: Chromel, Cross Marked Pins: Alumel
TOP ROW 2 and 3 Pairs,
LOWER ROW 5 and 10 pairs

Thermocouple Crimps for the Vacuum Side - see Page 60.

361-TCRIMP-CR

...Other Feedthroughs with MS Sockets: Sec.4 .....T/C Crimps: Page 5.8.....

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T/C Feedthrough Air Side Sockets

Vacuum Side Sockets & Crimps

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

General Specification Sockets

Standard Type	
Vacuum	Air use only
TC type	K, C, N, J or E
Temperature	125°C max.
Male connectors available on request	
Ceramic Type	
Vacuum	UHV
TC type	K, C, N
Temperature	650°C max.
Male connectors available on request	

361-TCRIMP-CR

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

See table on page 5.1.

General Specification Thermocouple Crimps

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

Standard Thermocouple Sockets

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

Plugs are available on request.

High Temperature Sockets - FEMALE 650°C

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

Thernocouple Sockets - MALE UHV

T/C TYPE	MAX. TEMP.	PART NUMBER
K Air side	125°C	361-TC-CONM-K
N Air side	125°C	361-TC-CONM-N
C Air side	125°C	361-TC-CONM-C
K UHV	650°C	361-TC-CONM-K-HT

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

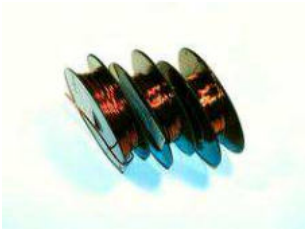
T/C TYPE	MAX. TEMP	PART NUMBER
R/S/T	200°C	361-TC-SCREW

Thermocouple Crimps

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

...K Type Thermocouple Feedthroughs: Page 5.2.....OFE Gaskets: Sec. 11....

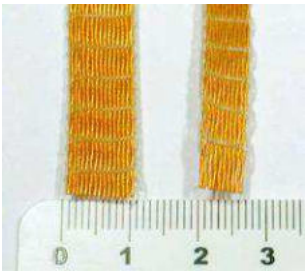
In Vacuum Wires, Cables, Connectors and Accessories



6.1 KAPTON WIRES FOR UHV

-> Page 6.2

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



6.2 KAPTON TWISTED PAIR AND RIBBON CABLES

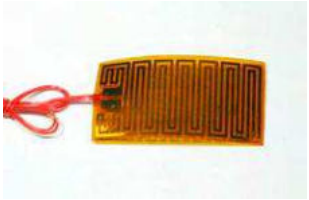
-> Page 6.4

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

6.3 CRYOGENIC WIRES

-> Page 6.5

Special thin wires
Materials: Copper, Manganin and Konstantan



6.4 READY MADE VACUUM CABLES

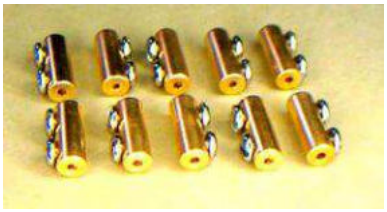
-> Page 6.6

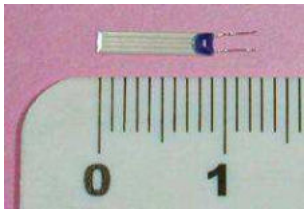
Coax cables for: SMA/ BNC/ MHV/ SH / N
Coax cables for single sided BNC/ MHV
Sub-D cables with 9 to 50 conductors
Special custom assemblies

6.5 CRIMP PINS, CONNECTORS, ACCESSORIES

-> Page 6.9

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





6.6 TOOLS CRIMPING AND WIRE STRIPPING

-> Page 6.16

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

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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:

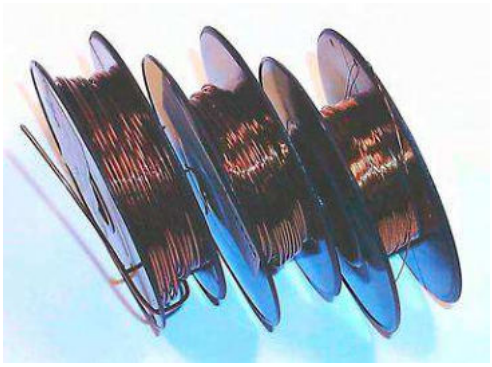
- Single Strand Dipped Kapton Wire
- Highly Flexible Multi-strand Types
- Coaxial Wires including 50 Ohm types
- Shielded Twisted Pairs and Ribbon Cable
- The original Caburn UHV® KAP1 and KAP2 types.

Type	ø Cond. mm	ø max. mm	V max V DC	I max A	Cond. mm²	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 instrumentaion, low current and low voltages
311-KAPM-035	0,35	0,50	1.000	1,0	0,08	225	Highly Flexible Wire, Sub-D connectors, low current and low voltage
311-KAPM-060	0,60	0,67	1.000	2,5	0,15	119	Highly flexible, Sub-D connectors, higher current
311-KAPM-075	0,75	0,81	1.000	5,0	0,33	53	Highly flexible high current wire, up to 10A for short periods
311-KAPM-100	1,00	1,17	1.000	9,0	0,6	30	Highly flexible high current wire, up to 10A for short periods
311-KAPM-200	2,00	2,20	1.000	20,0	2,0	8,9	Heaters, ideal for use with COMBO Sub-D f/t´s
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

...SMA 50 Ohm Connectors: Page 38...Co-axial and 50 Ohm Kapton Cable: Page 64-67...

KAPTON WIRES and RIBBON CABLE

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



Single Strand Specifications

Vacuum	UHV
Conductor	Copper
Insulation	Dipped Kapton©

311-KAP-060

Kapton Wires for UHV
Single strand dipped types - Copper conductor

Ø	AWG	LENGTH	PART NUMBER
0.10 mm	38	5 m	311-KAP-010-5M
0.10 mm	38	10 m	311-KAP-010-10M
0.12 mm	36	10 m	311-KAP-012-10M
0.14 mm	35	10 m	311-KAP-014-10M
0.25 mm	30	10 m	311-KAP-025-10M
NEW 0.40 mm	26	10 m	311-KAP-040-10M
0.63 mm	22	10 m	311-KAP-060-10M
1.00 mm	18	10 m	311-KAP-100-10M
NEW 1.02mm	2kV Ver.	10 m	311-KAP-102-10M
1.30 mm	16	5 m	311-KAP-130-5M
1.30 mm	16	10 m	311-KAP-130-10M
1.70 mm	14	5 m	311-KAP-170-5M
NEW 1.80 mm	13	5m	311-KAP-180-5M

Silver Plated Specifications

Vacuum	UHV
Conductor	Copper, silver plated
Insulation	Wrapped Kapton©

Kapton Wires for UHV
Silver Plated Copper Conductor

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

Multistrand Specifications

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

Kapton Wires for UHV
Multi-strand High Flexibility types

Ø	AWG	LENGTH	PART NUMBER
0.25 mm	30	10 m	311-KAPM-025-10M
0.35 mm	28	10 m	311-KAPM-035-10M
0.60 mm	22	10 m	311-KAPM-060-10M
0.75 mm	21	10 m	311-KAPM-075-10M
1.00 mm	18	10 m	311-KAPM-100-10M
2.20 mm	11	5 m	311-KAPM-200-5M
NEW 0,35 mm		10m	311-KAPM-035-RAD-10M
0.60 mm		10m	311-KAPM-060-RAD-10M
1.00 mm		10m	311-KAPM-100-RAD-10M

NEW

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

Ribbon cable specifications

Vacuum	UHV
Wire	311-KAPM-035
Binding	PEEK unfilled

311-KAP-PIB15
311-KAP-RIB10

Kapton Ribbon Cable for UHV
Silver plated Copper conductor

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

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

.....Tools (stripping/crimping): Page 77.....TC-Cable: Page 55.....

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Kapton® Coaxial types and Twisted Pairs for UHV

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

Specification Coaxial types

Construction 311-KAPM060-COAX:
Conductor 0.6mm ø (19x 0.12mm), Kapton insulation, Shield silver plated copper, Kapton insulation, ~500pF/m
Construction 311-KAPM025-SHIELD:
Conductor 0.23mm ø (7x 0.08mm), Kapton insulation, Shield silver plated copper, blank, ~125pF/m

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

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

* no outer insulation

50 Ohm Coaxial types

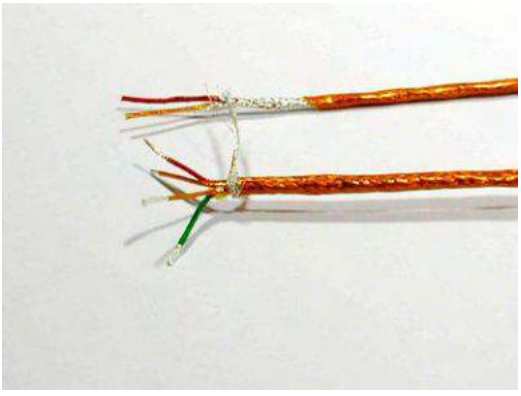
Standard type	311-KAP50
Impedance	50 Ohm
Conductor	Silver plated Cu -7 x 0.15mm
Capacitance	115pf/m
Damping	0.1 db/m at 100MHz
	1.1 db/m at 500MHz
	1.9 db/m at 1GHz
Miniature type	311-KAP50S
Impedance	50 Ohm
Conductor	Silver plated Cu -7 x 0.08mm
Capacitance	120pf/m
Damping	~3 db/m at 1GHz

50 Ω Coaxial Kapton Wires for UHV
Outer Diameter 2.3 mm

IMPEDANCE	LENGTH	PART NUMBER
50 Ohm	5 m	311-KAP50
50 Ohm	1 m	311-KAP50-1M

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

IMPEDANCE	LENGTH	PART NUMBER
50 Ohm	5 m	311-KAP50S
50 Ohm	1 m	311-KAP50S-1M



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
RG 178	1 m	312-PTFE50-S

* Please ask for PTFE wires data sheet

General Specification Twisted Pair

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

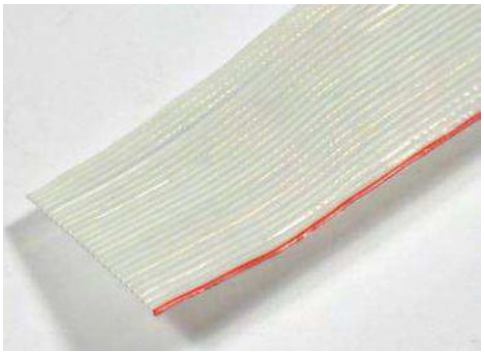
Twisted Pair Wires for UHV
Shielded with Kapton Insulation

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

...SMA 50 Ohm Connectors: Page 38.... 50 Ohm Ready made Cables: Page 67....

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



PTFE ribbon cable 312-PTFE-RIB-25

Specification Manganin Wire

Vacuum:	UHV
Conductor:	Manganin® (CuNiMn)
Insulation:	Kapton
Voltage:	1KV (0.14 mm) / 6KV (0.25 mm)
Resistivity	0.43 Ω mm²/ 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
0.14 mm	10 m	312-KAP-MAN-014-10M
0.25 mm	5 m	312-KAP-MAN-025-5M
0.25 mm	10 m	312-KAP-MAN-025-10M

Specification Constantan Wire

Vacuum:	UHV
Conductor:	Constantan®
Insulation:	PTFE
Voltage:	2KV
Resistivity	0.49 Ω mm²/ 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

Specification Braid

Vacuum	UHV
Material	Copper, Nickel plated

Braid, packed on a plastic tube for easy use

Braid Nickel plated Copper, per Meter

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

Specification PTFE RIBBON Cable

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

Typical application of bare wire: Used together with ceramic tubes (see page 6.13), a compact heater can be made.

PTFE Ribbon Cable for UHV Silver plated Copper conductor

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

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
0.2 mm	Tungsten	315-W-020

...Heaters: Page 6.12....Ceramic tubes: Page 6.13..... TC-Wire: Sec. 5....

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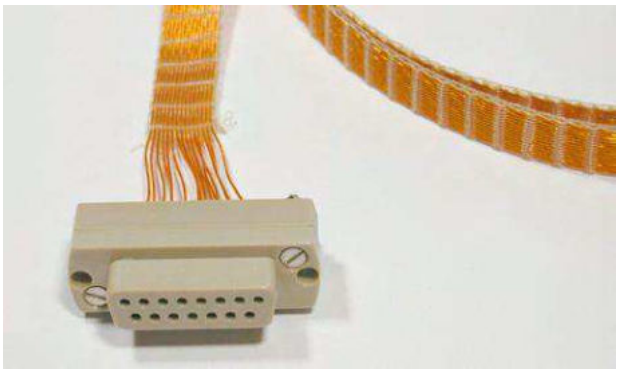
Ready Made In-vacuum Cables

Sub-miniature D Types

Standard Sub-D cables are made with ribbon cable (Kapton or PTFE). These versions are listed here.
Many other types can be offered on request:

- Single strand wires or shielded cables
- HV and UHV Types
- Different connectors at either end
- Second Shielding



Ribbon Cable Specification

Vacuum	HV/ UHV
Type of connector	HV / UHV PEEK / UHV CERAMIC
Gender	Female (fits to Feedthrough)
Type of cable	PTFE Ribbon / Kapton Ribbon

Example of two custom cables:
Top: Single wires used with HV Sub-D connectors including housing and strain relief

Bottom: Single wires with second shielding. A standard and a small 15-way connector are used on this type

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
15	500 mm	380-D15FXHR-500
25	500 mm	380-D25FXHR-500
37	500 mm	380-D37FXHR-500
50	500 mm	380-D50FXHR-500

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
15	500 mm	380-D15FXHPT-500
25	500 mm	380-D25FXHPT-500

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
15	500 mm	380-D15FXPR-500
25	500 mm	380-D25FXPR-500
37	500 mm	380-D37FXPR-500
50	500 mm	380-D50FXPR-500

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
15	500 mm	380-D15FXUR-500
25	500 mm	380-D25FXUR-500
37	500 mm	380-D37FXUR-500
50	500 mm	380-D50FXUR-500

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

No. OF WIRES	LENGTH	PART NUMBER
9	+500 mm	380-EXT-09
15	+500 mm	380-EXT-15
25	+500 mm	380-EXT-25
37	+500 mm	380-EXT-37
50	+500 mm	380-EXT-50

SMA / BNC 50 OHM Cables

For signal and High Frequency use, Coaxial cables with SMA and BNC connectors are listed here.
Versions with open end as well as with two connectors are offered, SMA is also offered with female types.
Standard length are 0.5 m and 1m, other lengths can be made according to your requirements.

Specification SMA-Cable

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

- 18 GHz cables see Sec. 3 -

Specification BNC Cable

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

380-BNC-MX-500

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
SMA	SMA	380-SMA-MM-500
SMA	SMA female	380-SMA-MF-500

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

TYPE1	TYPE2	PART NUMBER
BNC	OPEN	380-BNC-MX-500
BNC	BNC	380-BNC-MM-500

SMA/ BNC 50 OHM Cables
Extended length per 500 mm

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

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
Contact	to 1m	360-DS-C

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.

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

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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 additon 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

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

Kapton Coaxial SHV Cable - 50 Ohm type SHV5 to open end

TYPE	LENGTH	PART NUMBER
SHV	500 mm	380-SHV-FX-500
SHV	1000 mm	380-SHV-FX-1000

Feedthrough is Male

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

TYPE	LENGTH	PART NUMBER
MHV	500 mm	380-MHV-FX-500
MHV	1000 mm	380-MHV-FX-1000

Notice: Cable with male connector available.

Feedthrough is Male

Kapton Co-axial MICRODOT Cable - 50 Ohm type, 500 mm long MICRODOT to open end or SMA or BNC

TYPE 1	TYPE 2	PART NUMBER
MIC	open	380-MIC-MX-500
MIC	MIC	380-MIC-MM-500
MIC	SMA	380-MIC-SMA-500
MIC	BNC	380-MIC-BNC-500

Microdot Feedthrough is Female

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

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

Impedance of these connectors not constant

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

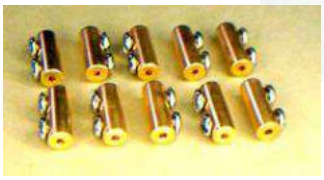
TYPE	No PER PKT.	PART NUMBER
BNC	1	245-CON-BNC
MHV	1	245-CON-MHV
MHV-male	1	245-CON-MHV-M
SHV	1	245-CON-SHV
N	1	245-CON-N
Microdot	1	245-CON-MIC

...SHV Feedthroughs: Sec. 3.....MHV Feedthroughs: Sec. 3.....

Sockets and Crimps

Here you can find a Selection of Accessories for In-Vacuum Cables:
- Screw on Connectors
- Crimp pins and Connectors 0.5 mm to 2.4 mm ø
- Push-On screw connectors

More components like Insulators, Ceramic Beads, Kapton tubes, UHV Shrink Hose, Braid, UHV Solder , UHV Glue, UHV grease will follow on the next pages



Specification Screw-on Socket

Max Current	20 ... 35A
Temperature	300 °C
Material	Copper-Beryllium
Reference	PIC

Screw-on Socket Beryllium Copper

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

Specification Power-Crimp

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

NEW

Power Crimps Beryllium Copper

MAX ID	No PER PKT.	PART NUMBER
0.8 mm	10	360-CRBC-0.8
1.3 mm	10	360-CRBC-1.3
1.4mm	10	360-CRBC-1.4
1.6 mm	10	360-CRBC-1.6

Specification Push-on Socket

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

Push-on Sockets Beryllium Copper

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

360-CRIMP-1.3

360-CRIMP-1.3on High Current Feedthrough

Crimps Female to fit Feedthroughs Gold plated copper alloy

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

360-PPO-1.3

Max. wire diameter is 1.25mm (up to 360-PPO-2.4) and 2.4mm for 360-PPO-6.3

Crimps MALE to fit Female Crimps Gold plated copper alloy

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

... Power contacts: Sec. 4 ..... Kapton wire: Page 6.3 ...

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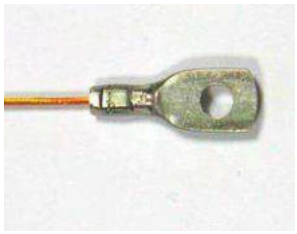
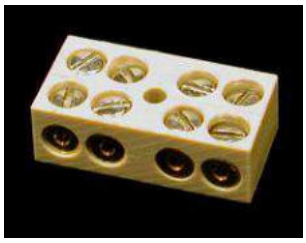
Crimps, Connector blocks; Limit Switches

Cable-lugs are a convenient way to connect In-vacuum Cable to other parts.
The In-vacuum Cable connectors can be used either for high current lines or for coaxial cables.
Normally Closed Limit Switches are offered in 2 different sizes. They come with plug-in contacts of 1mm diameter.

Specification Cable Shoes with Ring

Vacuum	HV/ UHV
Diameter	max. cable Ø 1.0mm to 2.5mm
Material	Cu, Tin plated / Nickel
Temp.	max 200°C / 400°C Nickel versions





Cable Shoes with Ring or Horseshoe connection Fit M2 to M5 screws

CABLE	MOUNT HOLE	QTY	PART NUMBER
1.5 mm	M3	5*	360-RING-1.5-M3-NI
1.5 mm	M4	5*	360-RING-1.5-M4-NI
2.2mm	M4	5 *	360-RING-2.2-M4-NI
1.0 mm	M2	10	360-RING-1.0-M2
1.0 mm	M3	10	360-RING-1.0-M3
1.7 mm	M2	10	360-RING-1.7-M2
1.7 mm	M3	10	360-RING-1.7-M3
2.4 mm	M3	10	360-RING-2.4-M3
1.0 mm	M3	10	360-LUG-1.0
1.7 mm	M3	10	360-LUG-1.7
2.5 mm	M5	5	360-LUG-2.5

*) 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

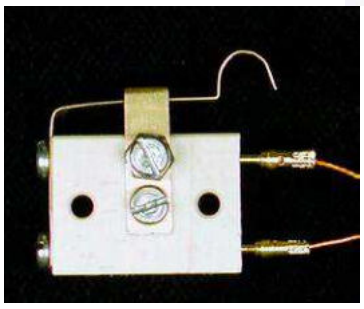
Connector Blocks for UHV PEEK

PINS	CONTACTS	PART NUMBER
4	2 X 2	360-SC2X2-1.8
4	1 X 4	360-SC1X4-1.8
6	1 X 6	360-SC1X6-1.8
8	1 X 8	360-SC1X8-1.8

360-CON-HC with these connectors either a high current connection or a coaxial connection (360-CON-COAX) can be made.

In-Vacuum Cable Connectors PEEK set of Plug and Socket

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



363-SWITCH-3

UHV Limit Switch Normally Closed Gold Plated Contacts

SIZE (mm)	MAIN BODY	PART NUMBER
25x17x8	15x10x6	363-SWITCH-1
25x17x8	20x10x6	363-SWITCH-2
25x23x8	20x15x6	363-SWITCH-3

...Tools:Pages 6.16-6.17..... Kapton Wire: Pages 6.2-6.5.....

UHV Lubricants, Thermal Contact pads, Glue and Kapton Solvent

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

- UHV Lubricant
- UHV Leak Sealant
- Liquid Metal / Contact pads
- UHV Glue
- Kapton removal paste



Specification UHV Lubricant

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

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

SIZE	PART NUMBER
10g	330-MCOTE-296

Specification UHV Dry Lubricant

Quality	highly pure MoS_2
Temperature	in-vacuum 1100°C
	air-side up to 450°C

UHV Dry Lubricant MoS_2

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

Specification Vacseal

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

Leak Sealant VACSEAL

SIZE	PART NUMBER
14ml	330-VACSEAL-S

Specificationthermal Contact Pad/ Liquid

Thermal contact, not suitable for Aluminium

Melting point	8°C (TCL) / 58°C (TCP)

Contain no Cadmium, Lead, Zinc

Vapour pressure	<10^{-8} mbar at 500°C
Boilung point	>1300°C (TCL)/ >1500°C (TCP)

thermal Contact Pad/ Liquid

NEW

TYPE	QTY	PART NUMBER
Metal foil	20x20 mm	317-TCP-20X20
Metal foil	38x38 mm	317-TCP-38X38
Liquid Metal	1g	317-TCL-1

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 viscsosity, leak tight
Glue2	Use like varnish, high viscosity
Glue3	Silver filled glue, conducting

UHV Glue 2 component solvent free

TYPE	QTY	PART NUMBER
UHV	30g	330-GLUE1
UHV	30g	330-GLUE2
UHV	25g	330-GLUE3

Specification KAPEX Solvent Paste

Description
Kapex dissolves Kapton and allows the insulation of Kapton Wire to be removed. The wire is coated in Kapex and Al foil and heated to 60-80°C. The dissolved Kapton can then be washed off.
Ready for use paste in syringe.

KAPEX Kapton Solvent Paste

SIZE	PART NUMBER
15g	315-KAPEX-S
30g	315-KAPEX-M

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

...UHV Solder: Page 6.13 .....UHV Shrink hose: Page 6.14.....

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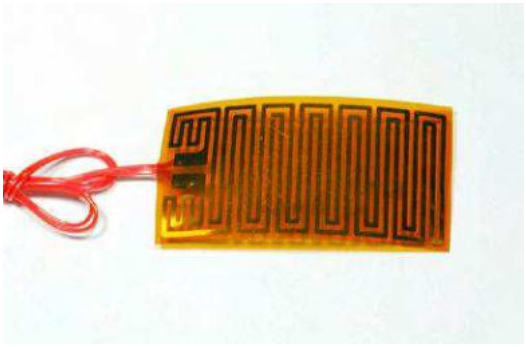
Heaters, Ceramic Beads, Cable Ties

Various heaters are offered here: Heater Foils and Miniature Ceramic Heaters.

Ceramic Beads can be used, when temperatures are too high for Kapton insulated cables.

Cable Ties made from 316 SS are useful for cable fixation inside the vacuum system.



Specification Kapton Heater Folis

Vacuum	to 10^{-9} mbar
Temperature	-200°C to 200°C

316-TIE-150

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

POWER	SIZE	PART NUMBER
8W/26Ω/0.55A	12.7 ø	317-KAPH-0.5
42W/78Ω/0.73A	25 x 25	317-KAPH-1/1
91W/39Ω/1.5A	25 x 50	317-KAPH-1/2
110W/185Ω/0.77A	50 x 50	317-KAPH-2/2
490W/43Ω/3.37A	102 x 102	317-KAPH-4/4

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

POWER	SIZE	PART NUMBER
45W/60Ω/0.9A	15 x 76	317-KAPH-15x76
125W/160Ω/0.9A	46 x 56	317-KAPH-46x56
50W/75Ω/0.8A	38 ø	317-KAPH-38
230W/275Ω/0.9A	66 ø	317-KAPH-66

316-CBEAD-1.5

Specification Miniature Heater

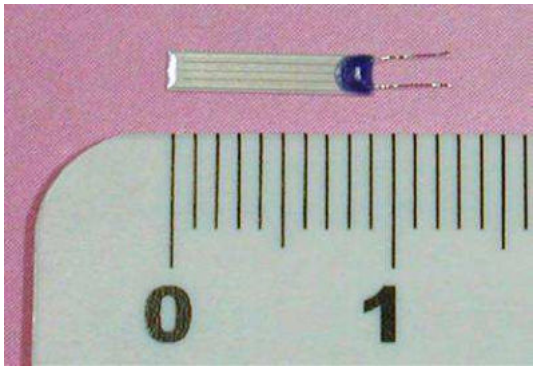
Temperature	-40°C ... 500°C
Material	Al_2O_3, Pt, Glass
Size	1.9 x 9.5 mm
Thickness	< 0.2 mm (contact area ~ 0.4 mm)
Connections	0.1 mm Pt-Wire ~3.5 mm long
High current	up to 2 A
Voltage	13.5 V
Resistivity	6.8 Ohm

Miniature Heater
UHV

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

Ceramic Beads
Pack for 250 mm Wire length

ID	OD	PART NUMBER
1.5 mm	4 mm	316-CBEAD-1.5
2.5 mm	5 mm	316-CBEAD-2.5
2.7 mm	6 mm	316-CBEAD-2.7



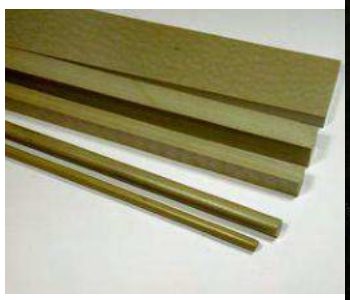
343-HEATER-2x10

SS Cable Ties
316 SS, Pack of 5

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

UHV Solder, PEEK material, ceramic tubes

Here you can find a Selection of In-Vacuum Accessories:
- UHV Solder (High Temperature and Lead Free version)
- PEEK raw Material in various shapes
- Ceramic Tubes for cable insulation with 1, 2 and 4 holes
- Coloured Glass Beads for Cable marking
- Material of ceramic tubes: Al_2O_3



Specification UHV Solder

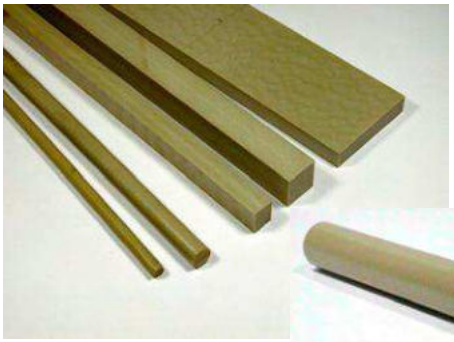
	315-SOLDER	315-LF-Solder
Melting point	300°C	225°C
Vapour press. (250°C)	<1.5 10^{-11}	<10^{-12} mbar
Material	Pb/Ag	Sn/Cu/Ag
RoHS conformity	Yes	Yes

315-LF-SOLDER
It includes flux
(~10ml)

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
Row 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
LEADED	1.0 m	315-SOLDER-1M

UHV Solder
Lead Free type to 225°C

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

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

SECTION	SIZE	PART NUMBER
C	Ø 6 mm	351-PEEK-6D
C	Ø 10 mm	351-PEEK-10D
C	Ø 16 mm	351-PEEK-16D
C	Ø 20 mm	351-PEEK-20D
R	6 x 15 mm	351-PEEK-6X15
R	10 x 14 mm	351-PEEK-10X14
R	10 x 50 mm	351-PEEK-10X50

Ceramic Tubes, 300mm Length

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

Coloured Marker Beads
6 different colours

ID / OD	Pack off	PART NUMBER
1mm/ 2mm	300	316-COLBEADS
0.6mm/ 2.4mm	500	316-COLBEADS-06
0.6mm/ 2.4mm	2000	316-COLBEADS-06-2000

...Kapton Foil: Page 6.15.....Tools : Page 6.16-6.17.....Kapex: Page 6.11...

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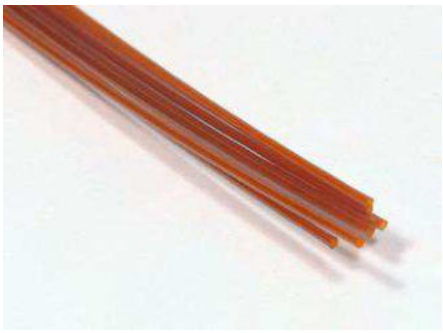
UHV Shrink Hose, Kapton Tubes Viton- and PTFE Hoses

Shrink Hose based on PFTE can be used as a problem solver for many applications in UHV.

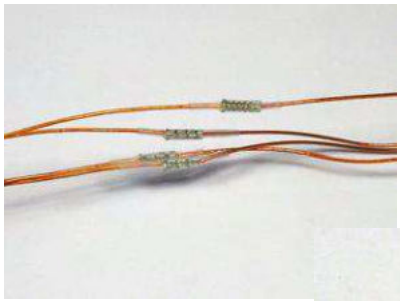
Kapton Tube allows easy insulation of bare wires and thermocouples.

Viton and PTFE Hose is offered in various sizes per meter



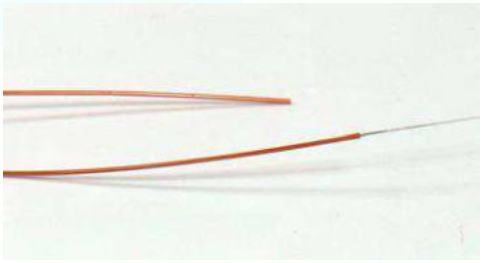
Specification for UHV Shrink Hose

Vacuum	UHV
Temperature	Shrink: >350°C UHV use up to 260°C
Shrink rate	4 : 1



316-SHRINK-Applications

312-KAP-TUBE



312-KAP-TUBE with bare wire

UHV compatible Shrink Hose 500mm per Pack

TYPE	MAX ID	PART NUMBER
PTFE	2.0 mm	316-SHRINK-20
PTFE	3.2 mm	316-SHRINK-32
PTFE	6.3 mm	316-SHRINK-63
PTFE	9.5 mm	316-SHRINK-95
PTFE	14 mm	316-SHRINK-140

Kapton© Tubes, 300 mm long extruded

TYPE	MAX ID	PART NUMBER
KAPTON	0.32 mm	312-KAP-TUBE-03-300
KAPTON	0.51 mm	312-KAP-TUBE-05-300
KAPTON	0.64 mm	312-KAP-TUBE-06-300
KAPTON	0.72 mm	312-KAP-TUBE-07-300
KAPTON	0.81 mm	312-KAP-TUBE-08-300
KAPTON	1.0 mm	312-KAP-TUBE-10-300
KAPTON	1.4 mm	312-KAP-TUBE-14-300

PTFE Tubes extruded, per Metre

TYPE	ID/ OD	PART NUMBER
PTFE	2/4 mm	370-PTFE-TUBE2
PTFE	3/5 mm	370-PTFE-TUBE3
PTFE	4/6 mm	370-PTFE-TUBE4
PTFE	10/12 mm	370-PTFE-TUBE10
PTFE	12/14 mm	370-PTFE-TUBE12

Specification KAPTON© Tubes

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

VITON© Tubes extruded, per Metre

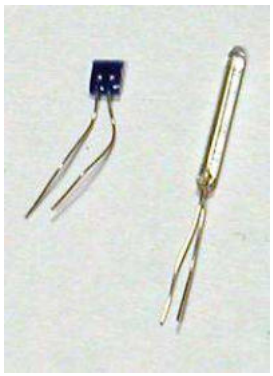
TYPE	ID/ OD	PART NUMBER
VITON	1/3 mm	370-VIT-TUBE1
VITON	2/4 mm	370-VIT-TUBE2
VITON	3/5 mm	370-VIT-TUBE3
VITON	4/6 mm	370-VIT-TUBE4
VITON	5/7 mm	370-VIT-TUBE5
VITON	6/9 mm	370-VIT-TUBE6
VITON	10/13 mm	370-VIT-TUBE10

...UHV Solder: Page 6.13.....Kapton wire: Pages 6.2-6.4.....

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*T)
Dimension	1.3mm Ø x 10mm
Wire lengths	~10mm

Platinum Resistance Thermometer GLASS Tube with or without 4x1m KAPM-025 wires

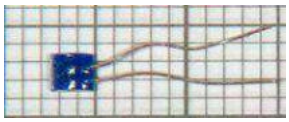
TYPE	SIZE	PART NUMBER
NO WIRES	1.3 x 10	343-PT100-1.3-B
WIRES	1.3 x 10	343-PT100-1.3-B-1M

Specification for PT100 Ceramic Thermometer

Vacuum	UHV 10 $^{-10}$ mbar
Temperature	-70 °C ... 500°C
Accuracy	Class 1/3 B (0.1 + 0.0017*T)
Dimension	2.3mm x 2.1mm x ~0.5mm
Wire lengths	~10mm

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

TYPE	SIZE	PART NUMBER
NO WIRES	2.3 x 2.1	343-PT100-C2
WIRES	2.3 x 2.1	343-PT100-C2-1M



Specification for Kapton Foil

Vacuum	UHV
Temperature	-270 ... 260°C
Material	Kapton®
Size	~200 x 300mm sheet
Thickness	25µm / 50µm / 75µm / 125µm
Voltage rating	2KV / 4KV / 6KV/ 10KV in vacuum

Kapton Foil 200 x 300 mm sheet

VOLTAGE	THICKNESS	PART NUMBER
2KV	25µ	312-KAPF-25-M
4KV	50µ	312-KAPF-50-M
6KV	75µ	312-KAPF-75-M
10KV	125µ	312-KAPF-125-M

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-CRTUBE-10
1,2mm	1,6 / 6 mm	360-CRTUBE-12
1,4mm	1,8 / 6 mm	360-CRTUBE-14
1,7mm	2,0 / 7 mm	360-CRTUBE-17
2,2mm	2,6 / 7 mm	360-CRTUBE-22
2,8mm	3,2 / 9 mm	360-CRTUBE-28
3,5mm	4,0 / 10 mm	360-CRTUBE-35
4,5mm	5,0 / 12 mm	360-CRTUBE-45
5,9mm	6,4 / 16 mm	360-CRTUBE-59

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

...KAPM-025 description: Page 6.2 .....Thermocouples: Sec. 5....

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Crimp tool overview

Here an overview of CRIMP PINS supplied by Allectra and the recommended CRIMP TOOLS.
The tools 321-CTOOL-SMA and CTOOL-SMA-BNC use the same basic tool with different crimp inserts.
Crimp results depend also on the used cable diameter.
In some cases, the locators must be removed.

Pin Type	Pin Type 2	214-CTOOL	214-CTOOL-SUB-D *)	214-CTOOL-HQ *)	214-CTOOL-TC	214-CTOOL-TC-HQ *)	214-CTOOL-TP *)	214-CTOOL-SMA	214-CTOOL-SMA-BNC	214-CTOOL-RING	Remarks
212-PINF	212-PINF-B	X	X	XX	(X)	(X)		(X)			Cable 0,25 - 1mm
212-PINF-S			X	XX	(X)	(X)		(X)			Cable 0,1 to 0,6mm
212-PINM		X	X	XX	(X)	(X)		(X)			Cable 0,25 - 1mm
212-PINM-S			X	XX	(X)	(X)		(X)			Cable 0,1 - 0,6mm
213-PINF-K/J...	213-PINM-K/J...				X	XX					
212-PINF-NH		X	X	XX	(X)	(X)		(X)			
212-PINF-HD		X	X	X		(X)		(X)			
212-POWER-F	212-POWER-M								X		for 311-KAPM-200
220-CM-PINF		(X)	X	XX	(X)	(X)					
220-CM-PINF-S		(X)	X	XX	(X)	(X)					
245-CON-SMA	245-CON-SMA-CER							X	XX		
245-CON-SMA-S									X		
245-CON-SMA-F	245-CON-SMA-90							X	X		
245-CON-BNC								X			
245-CON-BNC-S									X		for 311-KAP50-S
245-CON-MIC								X			
245-CON-SMB									X		
245-CON-N									X		
360-CRF-05		(X)	X	X				(X)			
360-CRF-07		X	X	X				(X)			
360-CRM-07		X	X	X				(X)			
360-CRIMP-1.3		X		X			X				
360-CRIMP-1.3-M		X		X			X				
360-CRIMP-2.4		(X)					X				
360-CRIMP-2.4-M		(X)					X				
360-TCRIMP-x		X		X			X				
360-CRBC-0.8		(X)		X			X				
360-CRBC-1.3		(X)		X			X				
360-CRBC-1.6		(X)		X			X				
360-LUG-xxx										XX	
360-RING-xxx										XX	

*): Crimp tool with Locator

XX: Best
X: Good
(X): Possible in some cases

...Crimp Pins: Sec. 4.....

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.

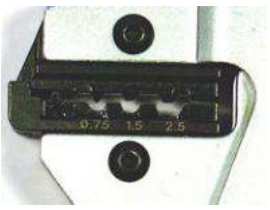
214-CTOOL-TC
Simple tool for thermocouple and other stamped pins.

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
214-CTOOL-SUB-D
214-CTOOL-HQ
214-CTOOL-TC
214-CTOOL-TC-HQ
214-CTOOL-TP
214-CTOOL-SMA
214-CTOOL-SMA-BNC
214-CTOOL-RING

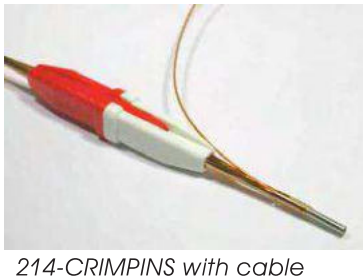
Kapton Wire Strippers
Precision Stripper

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

321-STRIP-10

Pin demounting Tool for Sub-D
ONLY FOR HV TYPES

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



214-CRIMPINS with cable

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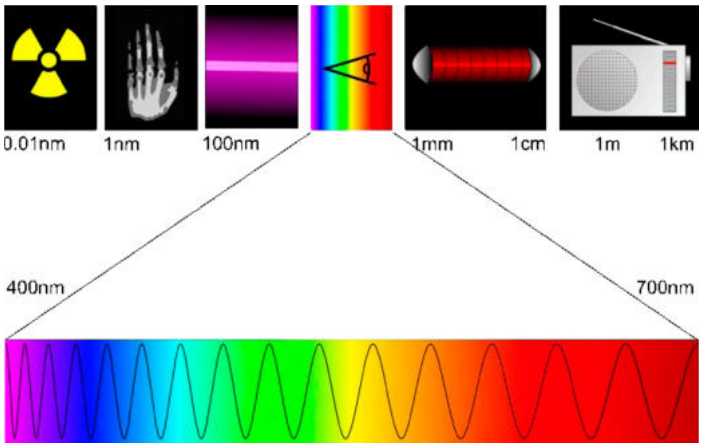
Viewports

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.



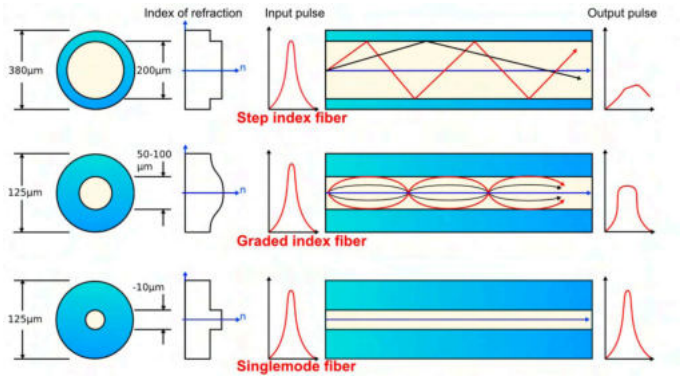
Spectra of electromagnetic rays.The visible range from about 400nm to 700nm is shown in detail.
Allectra offers materials from the X-Ray region to the infra-red (IR).

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 10μm.
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 (6-9µm), which is much smaller than the wavelength of the light, there is only one optical path available and the signal keeps its shape.

Both Graded Index and Single Mode have an Outside Diameter of 125 microns.

Allectra offers Feedthroughs and components with all three types.

Viewports and Fibre Optics for HV and UHV

7.1 STANDARD SERIES GLASS VIEWPORTS -> Page 7.3

Standard Glass Viewports for UHV and HV
Standard Glass Viewports, O-Ring Sealed ISO-K types
Standard Glass Viewports with Broad Band Anti-Reflective coating

7.2 SAPPHIRE VIEWPORTS -> Page 7.4

- UV GRADE Sapphire Viewports
- DUV GRADE Sapphire Viewports
- REGULAR GRADE Sapphire Viewports
- Large versions up to 137mm View Diameter
- High Vacuum Versions

7.3 FUSED SILICA (QUARTZ) VIEWPORTS -> Page 7.5

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

7.4 BBAR COATED VIEWPORTS -> Page 7.7

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

7.5 LASER VIEWPORTS -> Page 7.8

Laser Viewports with AR coating
40CF and 63CF sizes

7.6 NON-MAGNETIC AND CRYSTAL QUARTZ -> Page 7.9

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

7.7 SPECIAL MATERIALS VIEWPORTS -> Page 7.10

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

7.7 SPECIAL PURPOSE VIEWPORTS -> Page 7.11

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

7.8 VIEWPORT ACCESSORIES -> Page 7.12

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

7.9 FIBRE OPTICS (SUBSECTION) -> Page 7.13 - 7.17

High Vacuum Fibre Optic Feedthroughs O-Ring sealed
UHV Fibre Optic All Metal sealed Feedthroughs
Fibre Optic Cables for UHV and High Vacuum

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Standard Series Glass Viewports

Standard Glass Viewports are available on CF, KF and ISO-K Flanges. The glass material is Kodial (Boro-Silicate glass). These viewports are for normal visible light. For more demanding applications, Fused Silica (Quartz) is recommended.

Specification Standard Series Viewports

Vacuum	UHV	
Material	Glass	Kodial
	Transition	Kovar
	Flange	SS grade 304
Bakeable	400°C (CF) / 150°C (KF)	
Max. Gradient	5°C/ min	
Transmission	ca. 300 - 2500 nm	

Annealed gaskets or Allectra W type gaskets should be used for CF types.

Metal sealed Glass Viewports UHV

FLANGE	VIEW DIAM.	PART NUMBER
16CF	16	120-VPG-C16
40CF	38	120-VPG-C40
63CF	63	120-VPG-C63
100CF	90	120-VPG-C100
160CF	135	120-VPG-C160
200CF	135	120-VPG-C200

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.

Metal sealed Glass Viewports High Vacuum KF Types

FLANGE	VIEW DIAM.	PART NUMBER
16KF	16	120-VPG-K16
25KF	16	120-VPG-K25
40KF	32	120-VPG-K40
50KF	32	120-VPG-K50

Specification O-Ring Sealed ISO-K Viewports

Material	S/S holder
	Viton O-Ring
	Kodial glass

The O-Ring sealed viewports are an alternative to the metal sealed types. One O-Ring is used to seal the flange as well as the viewport. A significantly enlarged view diameter is obtained.

O-Ring sealed Glass Viewports ISO-K Types

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

Specification Anti-Reflective (BBAR) coating

Vacuum	UHV
Temperature	400°C
Coating	multi-layer coating
Transmission	typ. >99.5% in the visible range
Surface quality	60/40 scratch/dig

Standard Series Glass Viewports with Broad Band Anti-Reflective coating

FLANGE	VIEW DIAM.	PART NUMBER
16CF	16	120-VPG-C16-BBAR
40CF	38	120-VPG-C40-BBAR
63CF	63	120-VPG-C63-BBAR

...Viewport Shutters and Lead Glass: Page 7.12...Quartz viewports: Page 7.5...

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

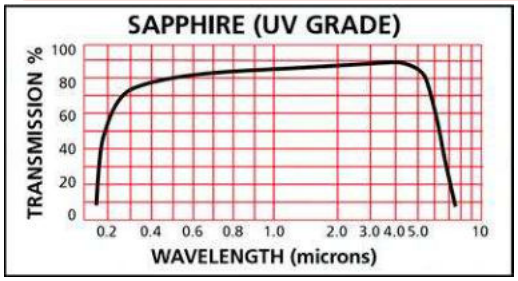
Parallelism	< 3 arc min
Surface finish	50-20 Scratch-Dig
Transmission	~ 180 – 5500nm
	>50% at 250nm

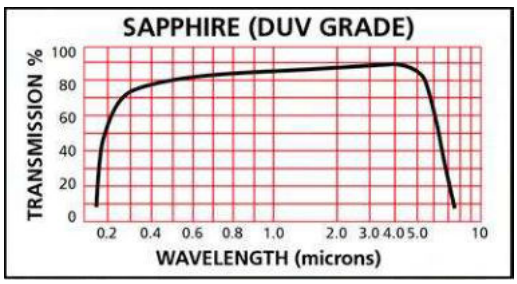
Specification DUV Grade Sapphire Viewports

Parallelism	< 3 arc min
Surface finish	20-10 Scratch-Dig
Transmission	~ 180 – 5500nm
	>70% at 250nm

Specification Regular Grade Sapphire Viewports

Paralellism	not specified
Surface finish	60-40 Scratch-Dig
Transmission	~ 250 – 5500nm





UV GRADE Sapphire Viewports UHV - no coating

REDUCED

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

Note: also available on KF flanges or as weld adaptors

DUV GRADE Sapphire Viewports UHV - no coating

REDUCED

FLANGE	VIEW Ø	THICKN.	PART NUMBER
40CF	17.5	2.0	130-VPSDUV-C40-17
40CF	23.8	2.0	130-VPSDUV-C40-24
63CF	36	2.0	130-VPSDUV-C63-36
63CF	49	2.4	130-VPSDUV-C63-49

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
40CF	32	1.5	131-VPS-C40-32
40CF	38	1.5	131-VPS-C40-40
63CF	63	2.0	131-VPS-C63-63
100CF	89	3.0	131-VPS-C100-89
160CF	136	4.0	131-VPS-C160-136

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
40 KF	38	1.5	131-VPS-K40-38
50 KF	38	1.5	131-VPS-K50-38
100 ISO-K	63	2.0	131-VPS-ISO100-63

Note: also available with BBAR or VAR coating

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

...Viewport Shutters: Page 7.12 .....Laser Viewports: Page 7.8.....

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

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

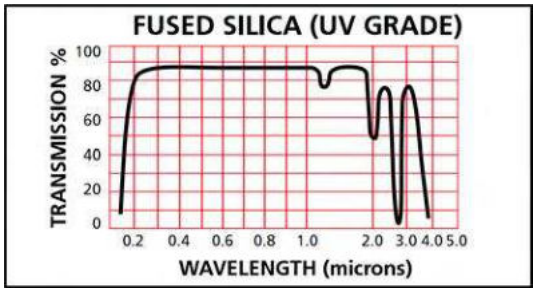
Specification UV Grade Fused Silica

Parallelism	<30 arc sec
Surface Finish	40-20 scratch/dig
Transmission	>90% @ 250nm
Usable range	200 ... 2000nm
Inclusions	max. 0.25mm²/100cm³ (class 2)
Isotropy	2D Material
Homogenity	Grade F

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

REDUCED

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



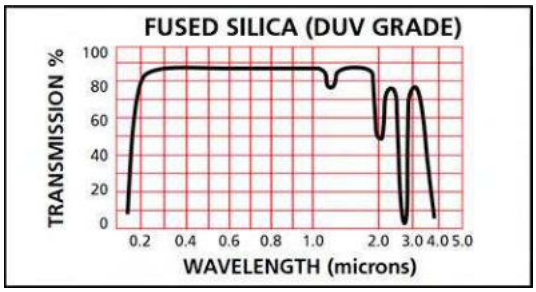
Specification DUV Grade Fused Silica

Parallelism	<10 arc sec
Surface Finish	20-10 scratch/dig
Flatness	λ/4 @ 632nm
Transmission	>99,8% @ 248nm (internal)
Usable range	200 ... 2000nm
Inclusions	max. 0.03mm²/100cm³ (class 0)
Isotropy	3D Material
Homogenity	Grade A

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

REDUCED

FLANGE	VIEW DIAM.	PART NUMBER
16CF	16	110-VPQZ-C16-DUV
40CF	35	110-VPQZ-C40-DUV
63CF	68	110-VPQZ-C63-DUV
100CF	98	110-VPQZ-C100-DUV
160CF	137	110-VPQZ-C160-DUV
200CF	198	110-VPQZ-C200-DUV



Fused Silica (Quartz) Thickness:

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

Coated Quartz Viewports are available:
See pages 7.7 and 7.8 for details of broad band coatings and single line coatings for laser applications.

...Lead Glass Shields: Page 7.12.....BBAR coated Viewports: Page 7.7.....

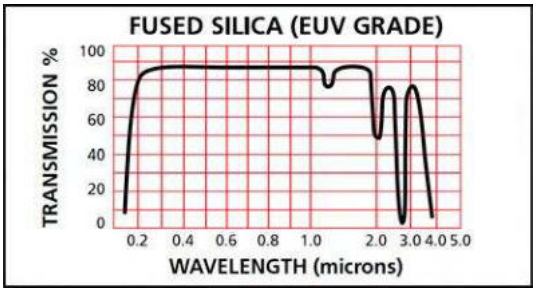
Excimer Grade Quartz Viewports

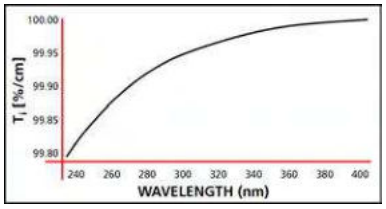
Designed for use with ArF based Excimer lasers (193nm) a high quality Fused Silica (Quartz) material is offered, which gives an internal transmission at this wavelength of more than 99.5%. These windows can also be used for other demanding applications in the UV region.

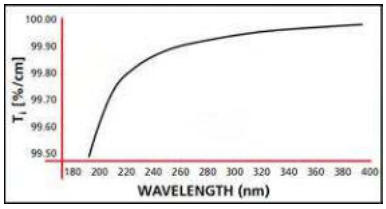
Specification	EXCIMER (EUV) GRADE Fused Silica
Parallelism	<10 arc sec.
Surface Finish	20-10 scratch/dig
Flatness	λ/4 @ 632nm
Transmission	>99,5% @ 193nm (internal)
Usable range	180 ... 2000nm
Inclusions	max. 0.03mm²/100cm³ (class 0)
Isotropy	3D Material
Homogenity	Grade A

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

FLANGE	VIEW DIAM.	PART NUMBER
40CF	35	110-VPQZ-C40-EX
63CF	68	110-VPQZ-C63-EX







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
Inmclusions	max 0.25mm²/100cm³
Isotropy	2D Material

Fused Silica Viewports
Versions on KF Flanges
REDUCED

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

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

...Viewport Shutters: Page 7.12.....Non-magnetic Viewports: Page 7.9.....

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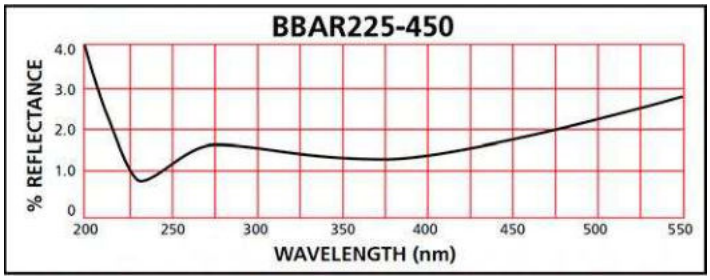
Fused Silica (Quartz) Viewports with BBAR coating

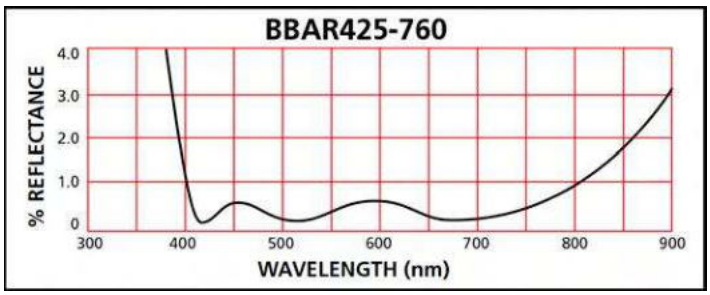
Three types of broad band anti-reflection coatings are offered as standard for 40CF and 63CF Flanges:

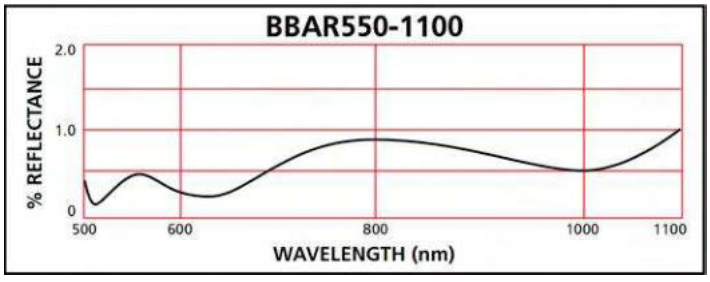
- UV Coating 225nm to 450nm
- Visible Spectra Coating 425 to 760nm
- Near IR Coating 550 to 1100nm

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. 0.03mm²/100cm³ (class 0)
Isotropy	3D Material
Homogenity	Grade A







Reflectance versus wavelength for the 3 different types of standard broad band coating.
Top: UV-range
Middle: Visible range
Bottom: IR range

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

REDUCED

FLANGE	View ø	PART NUMBER
40CF	35 mm	110-QZ-UV-C40
63CF	68 mm	110-QZ-UV-C63

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

REDUCED

FLANGE	View ø	PART NUMBER
40CF	35 mm	110-QZ-VIS-C40
63CF	68 mm	110-QZ-VIS-C63

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

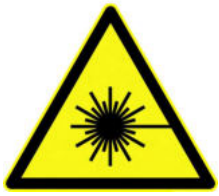
REDUCED

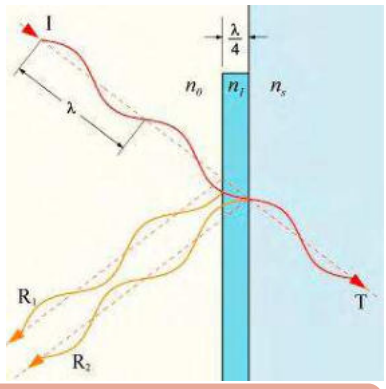
FLANGE	View ø	PART NUMBER
40CF	35 mm	110-QZ-IR-C40
63CF	68 mm	110-QZ-IR-C63

...Sapphire Viewports: Page 7.4.....Viewport door: Page 7.12.....

Laser Viewports with AR coating

For Laser applications Allectra offers high quallity 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 λ /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

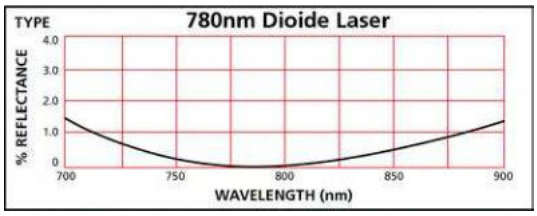
Vacuum	UHV
Temperature	-100 to 200°C
Parallelism	<10 arc sec
Flatness	λ/4 @ 632nm
Surface finish	20/10 Scratch/Dig
Homogenity	Grade A
Inclusion class	0
Coating	V-Coat with <0.25% Reflection/surf.
Material	
ArF (193nm)	Excimer Grade
KrF (248nm)	DUV Grade
Diode (780nm)	UV Grade
YAG (1064nm)	IR Grade
Laser Damage Threshold	
ArF	1 J/cm² for 10ns Pulse
KrF	10 J/cm² for 10ns Pulse
Diode	10 J/cm² for 10ns Pulse
YAG	10 J/cm² for 10ns Pulse

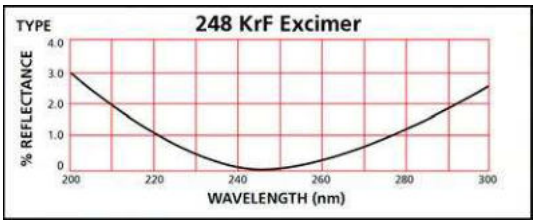
Laser Viewports with AR coating 40CF and 63CF flanges

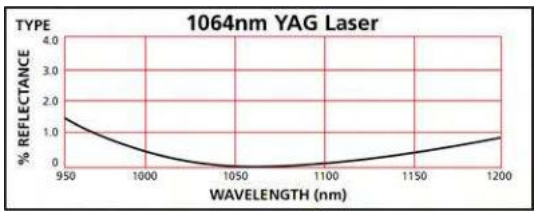
REDUCED

FLANGE	WAVELENGTH	PART NUMBER
40CF	193 nm	110-ARF-C40
63CF	193 nm	110-ARF-C63
40CF	248 nm	110-KRF-C40
63CF	248 nm	110-KRF-C63
40CF	780 nm	110-DIODE-C40
63CF	780 nm	110-DIODE-C63
40CF	1064 nm	110-YAG-C40
63CF	1064 nm	110-YAG-C63

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

...external Viewport Door for Radiation protection: Page 7.12 .....

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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.

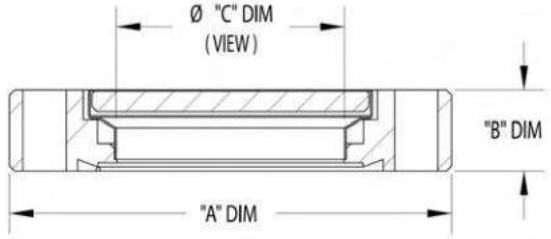
Specification Non-Magnetic Fused Silica

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 7.5

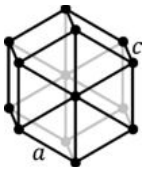
Non-Magnetic Fused Silica Viewports UV and DUV Quality REDUCED

FLANGE	TYPE	PART NUMBER
16CF	UV Grade	110-QZ-NM-C16-UV
40CF	UV Grade	110-QZ-NM-C40-UV
16CF	DUV Grade	110-QZ-NM-C16-DUV
40CF	DUV Grade	110-QZ-NM-C40-DUV



Viewport dimensions:
DN16CF: A= 34mm, B= 8.9mm, C= 16mm
DN40CF: A= 70mm, B=12.7mm, C= 35.5mm

Crystal Quartz Viewports



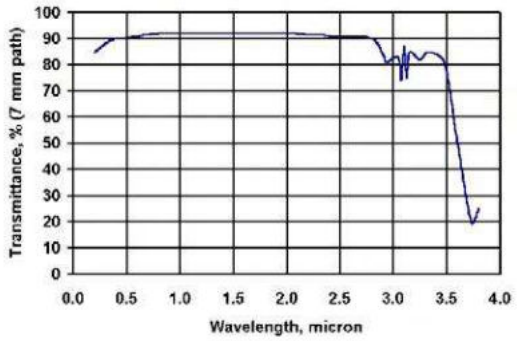
Optical Quality Crystalline Quartz features high transmittance in ultraviolet, visible and infrared spectrum from 190 to 2900 nm, birefringence, ability to rotate plane polarized light, high damage threshold and resistance to scratching. Optical quality material is virtually bubble and inclusion free,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

Crystal Quartz Viewports UHV

FLANGE	VIEW ø	PART NUMBER
40CF	22.8mm	110-QZ-C40-CRYST
63CF	48.2mm	110-QZ-C63-CRYST
100CF	48.2mm	110-QZ-C100-CRYST

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	λ/2 @ 632nm

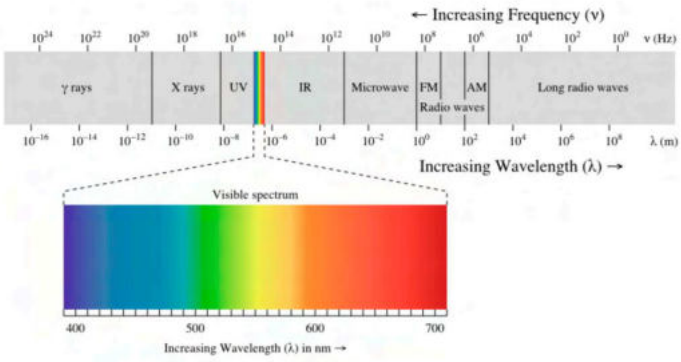


Transmission spectrum of Crystal Quartz

...Standard Fused Silica Viewports: Page 7.5.....316LN CF Flanges: Sec. 11.....

Special Materials Viewports

UHV Viewports made of Special Materials are available when other wavelengths than standard glass or quartz are needed. Calcium-Fluoride and Magnesium-Fluoride cover a wide transmission range from UV to Infrared down to 20µm (see the transmission curves below).
With the optional AR coating higher transmission can be reached.



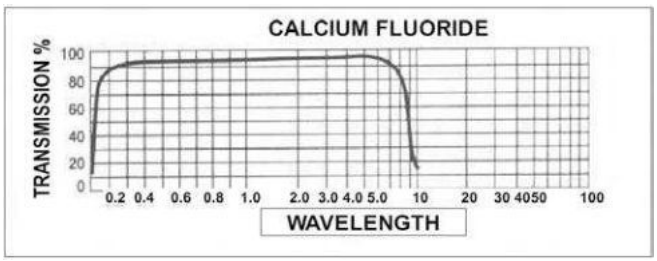
Specification Special Material Viewports

Vacuum	UHV, 10^{-10} mbar
Temperature	200°C (150°C for coated ZnSe)
Transmission:	
CaF2	150nm ... 9µm
MgF2	180nm ... 8µm
ZnSe	600nm ... 20µm
View Diameters	40CF: 23mm
	63CF: 48mm
Flatness:	λ /4
Surface finish	20/10 (CaF2 , MgF2)
	40/20 (ZnSe)

Special Materials Viewports - NO COATING UHV

REDUCED

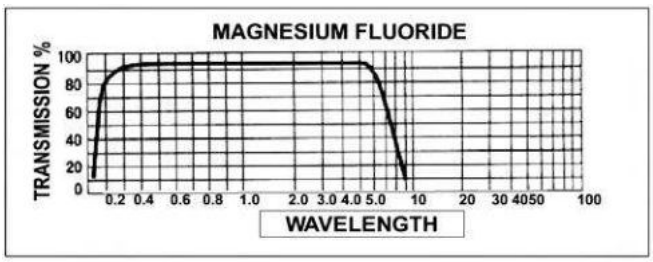
FLANGE	TYPE	PART NUMBER
40CF	CaF2	130-CAF-23-C40
63CF	CaF2	130-CAF-48-C63
40CF	MgF2	130-MGF-23-C40
63CF	MgF2	130-MGF-48-C63
40CF	ZnSe	130-ZNSE-23-C40
63CF	ZnSe	130-ZNSE-48-C63



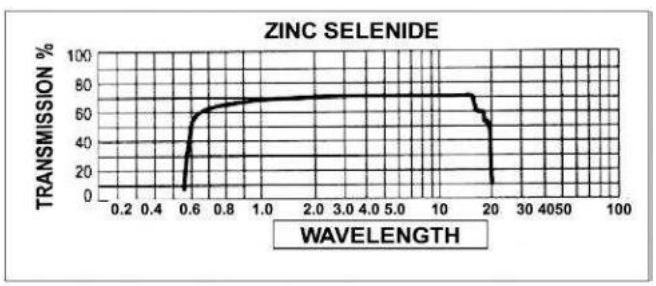
Special Materials Viewports ZnSe - AR COATED UHV

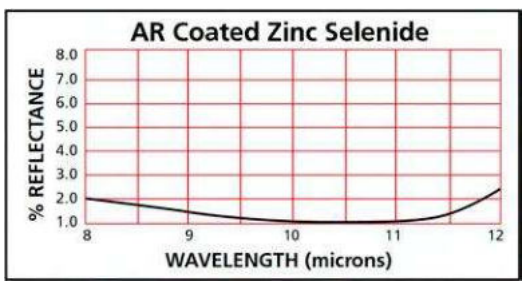
REDUCED

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



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





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

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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

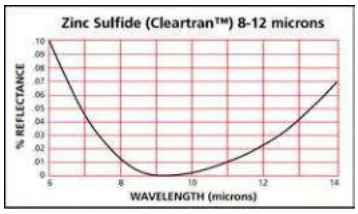
Re-Entrant Windows 63CF /100CF with Fused Slilca

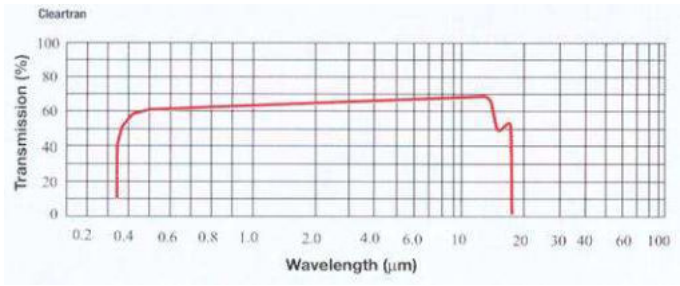
REDUCED

FLANGE	TYPE	PART NUMBER
63CF	UV	110-REQZ-C63-UV
100CF	UV	110-REQZ-C100-UV
63CF	DUV	110-REQZ-C63-DUV
100CF	DUV	110-REQZ-C100-DUV

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	λ /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.

...Standard Glass Viewports: Page 7.3.....Fused Silica: Page 7.5.....

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 wih through holes

140-VPSH-ISO100F

Viewport Shutter UHV and High Vacuum

FLANGE	TYPE	PART NUMBER
63CF	MANUAL	140-VPSH-C63
100CF	MANUAL	140-VPSH-C100
160CF	MANUAL	140-VPSH-C160
63 ISO	MANUAL	140-VPSH-ISO63F
100 ISO	MANUAL	140-VPSH-ISO100F

140-VPSH-C100

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.

Lead Glass Radiation Protection Screen ~1.5 mm lead equivalent

FLANGE	TYPE	PART NUMBER
16CF	KIT	140-LG-C16
40CF	KIT	140-LG-C40
63CF	KIT	140-LG-C63
100CF	KIT	140-LG-C100
160CF	KIT	140-LG-C160

140-LG-C63

External Viewport Door for Radiation Protection with microswitch for interlock circuit

FLANGE	TYPE	PART NUMBER
63CF	MANUAL	140-VPXD-C63
100CF	MANUAL	140-VPXD-C100
160CF	MANUAL	140-VPXD-C160

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

The External Viewport Door fits over the profile of a CF flange using extra long bolts or studding (not included). The microswitch can be fitted into a Safety Interlock circuit so that the 6mm Stainless Steel door can only be opened when a Laser or other device is switched off.
The External Viewport Door does not make a Vacuum Seal.

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

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Fibre Optics -Introduction

Four different types of Fibre Optic Feedthroughs are offered by Allectra:

1) High Vacuum Coupler Feedthrough

This type is sealed by an O-ring and is suitable down to 10^{-8} mbar. The seal is made by the in-vacuum connector. The air side Fibre can be removed without breaking the vacuum. For air and vacuum, Fibres with an SMA-F connector are required.

-> Page 7.14

2) UHV Feedthrough with SMA Connectors on both sides- All-metal types

A short Fibre is sealed into the Flange with an all-metal seal. The Fibres are coupled in the usual way with Fibre Couplers on the air and vacuum sides. Fibres with 200 / 400 / 600µm core diameter are used; a UV and an IR version are available.
A disadvantage is that two Fibre junctions are required

-> Page 7.15

3) UHV Feedthrough with attached In-Vacuum Fibre - All metal types

This type comes with the In-vacuum Fibre already attached to the flange. Only one coupling is required, which results in lower losses and a reduced overall system price. This system is offered with SMA connectors and 200 / 400 / 600µm Step Index Multimode Fibres.
UV and IR types are available.

-> Page 7.16

4) UHV Feedthrough with attached 125µm OD In-Vacuum Fibre and FC-PC connectors

With FC-PC connectors several types of Fibres can be offered:
- The typical 50µm core data fibre as a Multimode fibre
- Single mode fibre with 9µm core
- Single mode fibre wih 6µm core

The FC connector on the air side allows the direct combination also with ST-Connectors by using an adapter coupler. So a special ST-type feedthrough is obsolete.

-> Page 7.17

High Vacuum Fibre Optic Coupler Feedthrough

A low cost and simple solution for High Vacuum Fibre applications. Only one coupling is required to go into the vacuum system, the two F-SMA terminated Fibres are connected directly within the feedthrough and the seal is made with a Buna-N O Ring. Viton O-Ring option.
As fibres versions with 200 / 400 / 600µm core diameter are offered.

Specification Fibre Optic Coupler F/T

Vacuum	HV, down to 10^{-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

Fibre Optic Coupler Feedthroughs KF Flanges, O-Ring Sealed

REDUCED

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

Fibre Optic Coupler Feedthroughs CF Flanges, O-Ring Sealed

REDUCED

FLANGE	No of F/T	PART NUMBER
16CF	1	152-FCF-C16
40CF	1	152-FCF-C40
40CF	2	152-FCF-C40-2
40CF	3	152-FCF-C40-3
40CF	4	152-FCF-C40-4

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
Transmission	See Spectra on page 7.16

In-Vacuum Multimode Fibres UHV Versions 400 micron

REDUCED

TYPE	LENGTH	PART NUMBER
UV, SMA-SMA	300	151-SMA400-UV-300
UV, SMA-SMA	600	151-SMA400-UV-600
UV, SMA-Ferrule	600	151-SMA400F-UV-600
IR, SMA-SMA	300	151-SMA400-IR-300
IR, SMA-SMA	600	151-SMA400-IR-600
IR, SMA-Ferrule	600	151-SMA400F-IR-600

Other lengths available! 200µm and 600µm on request.

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

Replacement O-Rings

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

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

Fibre Optic Coupler Feedthroughs Vacuum Side Plug

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

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

...UHV All-metal Fibre Feedthrough: Page 7.15.....

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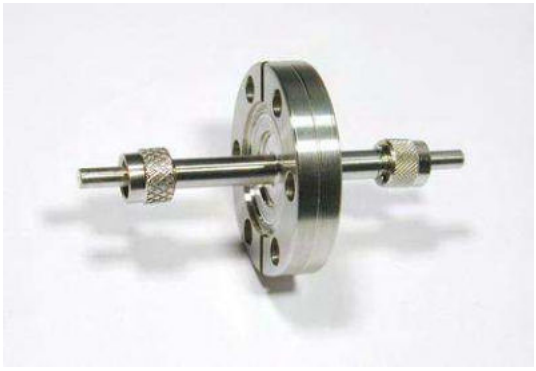
UHV Fibre Optic All Metal Feedthroughs

Allectra offers Fibre Optic All Metal Feedthroughs:

- UHV Fibre Optic All-Metal feedthrough - 600 µm Multi-mode Fibre
- Also available with 200µm and 400µm fibre
- UHV Fibre Optic F-SMA Couplers - Air and Vacuum Service
- Max. Power: 100kW/ cm^2 CW
  500kW/ cm^2 Pulses < 1µs
  (theoretical values by ideal beam profile)



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
Transmission spectra	see next page

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

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

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

REDUCED

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

Other lengths available on request

The UHV Feedthroughs use the same in-vacuum fibre as the Coupler Feedthroughs. We can offer custom lengths as required.

UHV Fibre Optic F-SMA Couplers Air and Vacuum Service

VACUUM	TYPE	PART NUMBER
UHV	F-SMA	151-FC-UHV
AIR	F-SMA	151-FC-AIR

... 125 Micron Fibres: Page 7.17 .....

UHV Fibreoptic Feedthrough with attached In-vacuum Fibre, SMA Types

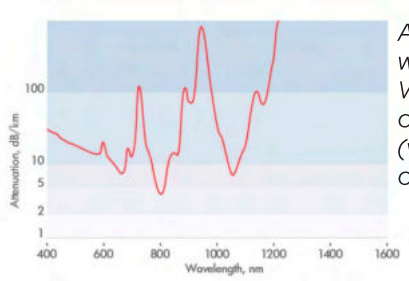
Fibreoptic Feedthroughs with attached In-vacuum Fibre reduce transmission losses as well as costs.The 400µm fibre has F-SMA905 connectors on both ends. A ferrule on the vacuum end is also available.
Also avilable with 200µm and 600µm firbres and with FC-PC connectors.

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
40CF	1x UV	150-UV-S-S-1000-C40
40CF	2x UV	150-UV-S-S-1000-C40-2
40CF	3x UV	150-UV-S-S-1000-C40-3



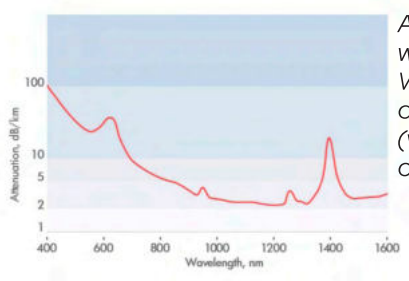
Attenuation versus wavelength for UV fibre. Values are given in dB/km (valid for 200µm/400µm and 600µm fibres)

Specification for UV Fibre 200/400/600 micron Multi-mode

UV FIBRE Type	
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
40CF	1x IR	150-IR-S-S-1000-C40
40CF	2x IR	150-IR-S-S-1000-C40-2
40CF	3x IR	150-IR-S-S-1000-C40-3



Attenuation versus wavelength for IR fibre. Values are given in dB/km (valid for 200µm/400µm and 600µm fibres)

Specification for IR Fibre 200/400/600 micron Multi-mode

IR FIBRE Type	
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

...High Vacuum O ring sealed Fibre feedthrough: Page 7.14.....

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125µm UHV Fibre Feedthroughs, Multi-Mode and Single Mode

Fibres with a cladding diameter of 125µm are offered with FC-PC Connectors. On the air side, the fibre has a standard length of 300mm. On the vacuum side a version with a Ferrule instead of the FC connector is offered.
A Multi-mode version with 50µm core is available as well as two Single mode types with 9µm or 6µm cores.
Air and vacuum side lengths can be made according your requirements!

General Specification 125µm Fibre types

Vacuum	UHV, < $5x10^{-10}$ 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, 300mm on Air

FC-PC connector with ceramic ferrule on the vacuum end of the feedthrough. Alternatively the fibre end can be terminated with a ferrule.
Customised lengths are possible.

Specification 125/50µm Multi-Mode Fibre F/T

Fibre Type	Multimode, 50µm Core Ø, 125µm OD
Transmission	600 – 2000 nm
Nom. Aperture	0.22
Damping	~0.014 dB /m at 1300nm

UHV Fibre Optic All-Metal Feedthrough 50µm Core, 125µm OD, Multi-Mode Fibre 1m long NEW

FLANGE	FIBRE	PART NUMBER
16CF	1x 125/50µm, 1000 mm	150-50-F-F-1000-300-C16
40CF	1x 125/50µm, 1000 mm	150-50-F-F-1000-300-C40
40CF	2x 125/50µm, 1000 mm	150-50-F-F-1000-300-C40-2
40CF	3x 125/50µm, 1000 mm	150-50-F-F-1000-300-C40-3

Specification 125/9µm Single-Mode Fibre F/T

Fibre Type	Monomode, 9µm Core Ø, 125µm OD
Transmission	1300 – 1600 nm
Cut-Off	<1250 nm
Num. Aperture	0.13
Damping	~0.0055 dB /m at 1300nm

UHV Fibre Optic All-Metal feedthrough 9µm Core,125µm OD, Single-Mode Fibre 1m long NEW

FLANGE	FIBRE	PART NUMBER
16CF	1x 125/9µm, 1000 mm	150-09-F-F-1000-300-C16
40CF	1x 125/9µm, 1000 mm	150-09-F-F-1000-300-C40
40CF	2x 125/9µm, 1000 mm	150-09-F-F-1000-300-C40-2
40CF	3x 125/9µm, 1000 mm	150-09-F-F-1000-300-C40-3

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

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

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

FLANGE	FIBRE	PART NUMBER
16CF	1x 125/6µm, 1000 mm	150-06-F-F-1000-300-C16
40CF	1x 125/6µm, 1000 mm	150-06-F-F-1000-300-C40
40CF	2x 125/6µm, 1000 mm	150-06-F-F-1000-300-C40-2
40CF	3x 125/6µm, 1000 mm	150-06-F-F-1000-300-C40-3

Fibre Coupler for air and vacuum side are available: we offer FC-FC and FC-ST types.

...Step index Multi-mode Fibres: Page 7.14.....

UHV and High Vacuum Valves

8.1 UHV AND HIGH VACUUM GATE VALVES -> Page 8.2

UHV and High Vacuum Gate Valves - Manual
UHV and High Vacuum Gate Valves - Pneumatic with Position Indicator
UHV and High Vacuum Gate Valves - Spare Gasket Sets
High Vacuum Rectangular Gate Valves - Pneumatic with Position Indicator

8.2 UHV AND HIGH VACUUM RIGHT ANGLE VALVES -> Page 8.4

SMC Valves, Right Angle - Manual
SMC Valves, Right Angle - Pneumatic
CF UHV Right Angle Valves - Stainless Steel - Manual
CF UHV Right Angle Valves - Stainless Steel - Pneumatic

8.3 ALL METAL VALVES -> Page 8.5

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

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UHV and High Vacuum Gate Valves - Manual

Pneumatic with Position Indicator

As Distribution partner of HVA, Allectra offers a full range of Gate Valves for HV and UHV applications.
More than 30 years of experience make HVA valves to one of the leading valve manufacturers over the world.

- Manual and Electro-pneumatic versions
- Edge Welded Bellows plate movement
- Spare parts and In House Service
- 1 Million Cycles as option

Specification Gate Valves - Manual

Sizes	DN16CF - DN350CF
	DN16KF - DN600ISO
Material	Stainless Steel
Max. Temperature	open 200°C
	closed 150°C
Bellows	Edge Welded
Gasket Gate	Viton
Bonnet seal	Metal (UHV) / Viton (HV)
Vacuum	$<2*10^{-10}$ mbar l/s
Orientation	any
Cycles	100.000 to first service

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

UHV and High Vacuum Gate Valves MANUAL

FLANGE	THICKNESS	PART NUMBER
16CF	39,6	515-GV-C16
40CF	51,6	515-GV-C40
63CF	61,2	515-GV-C63
100CF	75,4	515-GV-C100
160CF	80,5	515-GV-C160
200CF	85,0	515-GV-C200
250CF	92,8	515-GV-C250
16KF	75,2	515-GV-K16
40KF	50,7	515-GV-K40
50KF	50,7	515-GV-K50
63-ISO	51,4	515-GV-ISO63
100-ISO	61,2	515-GV-ISO100
160-ISO	59,9	515-GV-ISO160
200-ISO	67,4	515-GV-ISO200
250-ISO	80,1	515-GV-ISO250

Specification Gate Valves - Pneumatic

Air Cylinder	Aluminium-cylinder
Air Pressure	4.8 - 6.9 bar
	adjustable closure speed
Solenoid	24V DC Standard
Position Indicator	REED, 28V max. 20 mA

UHV and High Vacuum Gate Valves PNEUMATIC WITH POSITION INDICATOR

FLANGE	THICKNESS	PART NUMBER
16CF	39,6	515-GV-C16-P
40CF	51,6	515-GV-C40-P
63CF	61,2	515-GV-C63-P
100CF	75,4	515-GV-C100-P
160CF	80,5	515-GV-C160-P
200CF	85,0	515-GV-C200-P
250CF	92,8	515-GV-C250-P
16KF	75,2	515-GV-K16-P
40KF	50,7	515-GV-K40-P
50KF	50,7	515-GV-K50-P
63-ISO	51,4	515-GV-ISO63-P
100-ISO	61,2	515-GV-ISO100-P
160-ISO	59,9	515-GV-ISO160-P
200-ISO	67,4	515-GV-ISO200-P
250-ISO	80,1	515-GV-ISO250-P

From left to right:
- 515-GV-C100, manual
- 511-GV-C160-P, peneumatic
- 511-GV-C200, manual

...CF Gaskets and Bolts: Sec. 11.....KF Clamps: Sec. 12.....

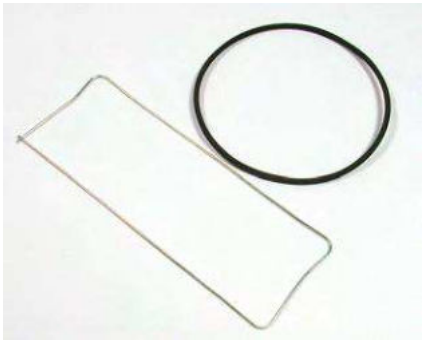
UHV and High Vacuum Gate Valves - Spare Gasket-Sets

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 avilable.

Specification for UHV/ HV Gate Valves Spare Gasket Sets

Gaskets	Replacement Gasket Sets include two Gaskets (UHV: Viton + Metal)
Spare Parts	A full range of Spare Parts including bellows and pneumatic cylinders are available on request.



Spare Gate Valve Gasket set

UHV CF Gate Valves SPARE GASKET SETS (1Viton, 1 Metal)

FLANGE	GASKETS	PART NUMBER
16CF	2	515-GVG-C16
40CF	2	515-GVG-C40
63ICF	2	515-GVG-C63
100CF	2	515-GVG-C100
160CF	2	515-GVG-C160
200CF	2	515-GVG-C200
250CF	2	515-GVG-C250

HV KF/ISO Gate Valves SPARE GASKET SETS (2xViton)

FLANGE	GASKETS	PART NUMBER
16KF	2	515-GVG-K16
40KF	2	515-GVG-K40
50KF	2	515-GVG-K50
63ISO	2	515-GVG-ISO63
100ISO	2	515-GVG-ISO100
160ISO	2	515-GVG-ISO160
200ISO	2	515-GVG-ISO200
250ISO	2	515-GVG-ISO250

Specification for Rectangular Gate Valves

Vacuum	HV 10^{-9} mbar
Bakeout	150°C open and closed (Sensor 60°C max)
Air cylinder	Aluminium-cylinder
Air Pressure	4.8 – 6.9 bar adjustable closure speed
Solonoid	24V DC Standard
Position Indicator	REED, 28V max. 20mA
First service	1.000.000 cycles

High Vacuum Rectangular Gate Valves PNEUMATIC WITH POSITION INDICATOR

APERTURE	THICKNESS	PART NUMBER
32 X 220	60	515-RAGV-32x220
33 X 332	60	515-RAGV-33x332
46 X 223	60	515-RAGV-46x223
50 X 336	60	515-RAGV-50x336

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

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Viton Sealed Right Angle Valves -SMC-

Allectra represents the high quality SMC pneumatic and manual angle valve. With a standard lifetime of 2.000.000 cycles they are suitable for demanding applications also in industrial applications. Here are only listed the basic versions, many options are available:

- Manual and Pneumatic versions
- CF versions with SS body
- Normally open pneumatic valves
- 2-Step control with bypass (to avoid turbulences)

Please ask for the full SMC catalogue!

Specification SMC Right Angle - Aluminium Manual + Pneumatic

Size	16/ 25/ 40/50/ 63KF, ISO-K63
Seal	Viton
Leak rate	<1x10 $^{-9}$ mbar l /s
Bake Temp.	60°C / 150°C as option
Port Length	(symmetric) from port to centre axis
16KF	40 mm
25KF	50 mm
40KF	65 mm
50KF	70 mm
ISO-K	88 mm
Lifetime	100.000 manual/ 2 Mio pneum.

Pneumatic valves need an air pressure of 4 -7 bar. A solenoid valve 24V DC is included as standard. Valves listed here are normally closed.

High Vacuum Right Angle Valves Aluminium - MANUAL

FLANGE	SEAL	PART NUMBER
16KF	VITON	518-AV-K16-V-ALU
25KF	VITON	518-AV-K25-V-ALU
40KF	VITON	518-AV-K40-V-ALU
50KF	VITON	518-AV-K50-V-ALU

High Vacuum Right Angle Valves Aluminium - PNEUMATIC

FLANGE	SEAL	PART NUMBER
16KF	VITON	518-AVP-K16-V-24V
25KF	VITON	518-AVP-K25-V-24V
40KF	VITON	518-AVP-K40-V-24V
50KF	VITON	518-AVP-K50-V-24V
ISO-K63	VITON	518-AVP-ISO63-V-24V

Specification for Right Angle Valves - Stainless Steel CF flanges, Manual + Pneumatic

Size	16CF / 40CF / 63CF
Seal	Viton
Leak rate	<10-9 mbar l /s
Bakeout temp	150°C closed
Port Length	(symmetric) from port to centre axis
16CF	40mm
40CF	65mm
63CF	105mm

UHV Right Angle Valves Stainless Steel MANUAL

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

UHV Right Angle Valves Stainless Steel PNEUMATIC

FLANGE	SEAL	PART NUMBER
16CF	VITON	511-AVP-C16-V
40CF	VITON	511-AVP-C40-V
63CF	VITON	511-AVP-C63-V

Please ask the Sales Office for a full catalogue of the SMC valves!
Inline Valves are available as well.

...CF Gaskets and Bolts: Sec. 11.....KF Clamps: Sec. 12.....

All Metal Valves - Manual Right Angle

All Metal Right Angle valves are designed and specially built for Allectra by a major UHV valve company. They are suitable for ultimate UHV service.

- Copper Gasket to Stainless Steel knife edge seal
- With two rotatable through hole flanges
- Bakeable to 450°C
- Stainless Steel construction with a replaceable Copper sealing pad.

Specification All Metal Valves

Vacuum	UHV (10^{-12} mbar to atmosphere)
Leak rate	< 10^{-11} mbar l/s
Material	SS and Copper
Max. Temp.	450°C open
	300°C closed
Port length from valve axis	
	16CF 38 mm
	40CF 63 mm
Sealing Pad	Cu- replaceable through side port
Conductance	16CF 5 l/s
	40CF 34 l/s

UHV All metal Valves MANUAL RIGHT ANGLE

FLANGE	TUBE	PART NUMBER
-	19.1	512-AMV16
16CF	19.1	512-AMV16-C16
-	41.3	512-AMV40
40CF	41.3	512-AMV40-C40

UHV All metal Valves Replacement Copper Pads

FLANGE	SEAL	PART NUMBER
16CF	Cu	512-AMV16-PAD
40CF	Cu	512-AMV40-PAD

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 Leak Valves: Page 8.6.....

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UHV Miniature Leak Valve

UHV Precision Leak Valve

Allectra offers two types of UHV leak valves.
Both types are an All metal bakeable construction
Miniature type has Nickel diaphragm suitable for hot or corrosive gases

- 16CF or 40CF flanges
- Spare parts available

Specification Miniature Leak Valve

Vacuum	UHV
Min leak	10^{-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

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
40CF	16CF	514-LVP-C40

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

...CF All metal valves: Page 8.5.....CF Gaskets and Bolts: Sec. 11.....

Linear Drives, Rotary Motion Drives and Manipulators

9.1 LINEAR DRIVES: MANUAL, MOTORIZED, PNEUMATIC -> Page 9.2

UHV bellows COMPACT Drives - Manual Knurled-Knob-Types
UHV bellows COMPACT Drives - Stepper-Motor-Driven-Types
UHV bellows Linear Drives - Manual Push-Pull-Types
UHV bellows Linear Drives - Pneumatic-Types and other options

9.2 ROTARY MOTION DRIVES -> Page 9.4

Rotary Motion Drives - UHV-Bellows-Types, Length from flange 38mm
Rotary Motion Drives - UHV-Bellows-Types, Extended length types
Rotary Motion Drives - Magnetically-Coupled-Type

9.3 Z-SHIFTERS (LINEAR TRANSLATORS) -> Page 9.5

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

9.4 UHV MANIPULATORS AND ACCESSORIES -> Page 9.6

Compact UHV-Manipulators
High Precision UHV-Manipulators

UHV Long Travel Z-Translator
Compact X-Y Stages
Precision Rotary Motion Drives Single axis
Precision Rotary Motion Drives Rotation + Linear

9.5 MAGNETIC TRANSPORTERS AND ACCESSORIES -> Page 9.8

UHV Magnetic Transporters
High Vacuum Magnetic Transporters
Guide Option for Linear Motion Only

Quick Access Doors No Viewport
Quick Access Doors with Viewport
Load Lock Chambers

9.6 WOBBLE STICKS AND PORT ALIGNERS -> Page 9.10

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

9.7 In-VACUUM STEPPER MOTORS AND SLIDES -> Page 9.11

In-vacuum Stepper Motor/ Fine Vacuum Motor
In-vacuum Stepper Motor/ High Vacuum Motor
In-vacuum Stepper Motor/ UHV with special lubricant
In-vacuum Stepper Motor/ UHV - NO lubricant

In-vacuum Motorised Slides

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Linear Drives Manual and Motorised – COMPACT type

A new range of linear drives designed for demanding applications where precise positioning of components is required.

- Manual drive with knurled knob and position scale (min readout: 10μm)
- Stepper Motor version with scale and limit switches option

Typical applications include shutter control.

Specification Compact Drives

Vacuum	UHV
Temp.	220°C max (Stepper Motors removed)
Materials	Stainless Steel, Aluminium
Seal	TIG weld
Bellows	Edge welded
Shaft	6 mm
Shaft tip	M4 tapped hole

Specification Manual types

Travel/ rev.	1 mm
Min readout	10μm

Dimensions - please ask for a full data sheet

Specification Motorised types

Motor	2 phase stepper
Wires	8 wire
Current max	2 A per phase (Bipolar wiring)
Travel	5μm / 1 full step
Repeatability	+/-1 μm typical
Manual knob	included
Limit Switches	Optional

Drive with limit switch box.
A single Sub-D connector is used for stepper motor connection and mechanical limit switches

16CF MANUAL KNURLED KNOB types 6 mm shaft

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

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
16KF	50 mm	612-CLD50-K16
16KF	100 mm	612-CLD100-K16

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
16CF	50 mm	612-CLD50-SM-C16
16CF	100 mm	612-CLD100-SM-C16

Note: also available on KF and other flanges

UHV bellows COMPACT Drives STEPPER MOTOR with LIMIT SWITCH BOX

FLANGE	TRAVEL	PART NUMBER
16CF	25 mm	612-CLD25-SM-LS-C16
16CF	50 mm	612-CLD50-SM-LS-C16
16CF	100 mm	612-CLD100-SM-LS-C16

Note: also available on KF and other flanges

The standard axis has a diameter of 6mm with an M4 vented thread in the tip.
Min. Length is 90mm for CF16, 101mm for CF40 and 102mm for all KF versions.

We can offer special axis with competitie prices. Please ask for your quote

...Rotary drives: Page 9.4.....UHV Manipulators: Page 9.6.....

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 interchageable and the Manual one can be exchanged for Pneumatic.
Additionally a Manual knob allowing intermediate position control is available as an option.

- Manual version Quick Action Push-Pull
- Pneumatic option
- All metal edge welded bellows construction

Specification Linear Drives

Vacuum	UHV
Temperature	220°C max
Materials	Stainless Steel
Seal	weld
Bellows	Edge welded
Shaft	6 mm
Cycles	>10.000
Operation	Manual Push-Pull (Rotary Knob + Pneumatic actuator option)

16CF UHV bellows Linear Drives MANUAL PUSH-PULL types

FLANGE	TRAVEL	PART NUMBER
16CF	25 mm	612-LD25-PP-C16
16CF	50 mm	612-LD50-PP-C16
16CF	100 mm	612-LD100-PP-C16

Note: also available on 40CF and other flanges

612-LD100-PP-C16, Push-Pull drive with 100 mm travel

16KF bellows Linear Drives MANUAL PUSH-PULL types

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

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

Specification Pneumatic types

Air pressure	5-7 bar
Voltage	24 V DC

24 V AC and 240 V AC option

UHV bellows Linear Drives PNEUMATIC types

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

Note: also available on KF and other flanges

Pneumatic linear drive 612-LD50-PM-C16 with rotary knob exchange kit

UHV bellows Linear Drives OPTIONS

OPTION		PART NUMBER
Position indicator		614-LD-PI
Double axis		614-LD-DD
Solenoid	24V DC	614-SV-24VDC
Solenoid	230V AC	614-SV-230V
Rot. Knob exchange kit		614-KIT-RD-XXX
Push-Pull exchange kit		614-KIT-PP-XXX
Pneumatic exchange kit		614-KIT-PM-XXX

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

...Z Shifters: Page 9.5.....In-vacuum Stepper Motors: Page 9.11.....

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Rotary Motion Drives

Allectra offers both bellows sealed type Rotary Dives 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
40CF	6 mm	611-RD-C40

611-RD-C16

Rotary Motion Drives
UHV bellows types, Extended length types

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

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.

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
16CF	0.49Nm	611-MRD-C16
40CF	2.45Nm	611-MRD-C40

The following options are available for Magnetically Coupled Rotary Drives
- DC Motor
- Pneumatic actuator
- Stepper motor

Please contact Sales Office for details

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

...UHV Manipulators: Page 9.6.....In-vacuum Stepper Motors: Page 9.11.....

Z-Shifters (Linear Translators)

Z-Shifter Mini-Z type

Differentially Pumped Push-Pull

Allectra offers a range of devices for moving components inside the Vacuum.

- Bellows all metal Z-Shifters with travel up to 200 mm
- Mini Z-Shifters with travel up to 50 mm
- A low cost Rotary/ Linear Push Pull device with a double O ring seal and differential pumping.

Specification Z Shifters

Vacuum	UHV
Temp.	220°C max
Materials	Stainless Steel
Bellows	Edge welded
Flanges	16CF: both tapped
	40CF: top flange tapped
	63CF: through holes
Through Bore	16CF: 16mm
	40CF: 36mm (38mm on request)
	63CF: 63mm

Z-Shifters UHV bellows type

FLANGE	TRAVEL	PART NUMBER
40CF	25 mm	621-LT-C40-25
40CF	50 mm	621-LT-C40-50
40CF	100 mm	621-LT-C40-100
40CF	150 mm	621-LT-C40-150
40CF	200 mm	621-LT-C40-200
63CF	50 mm	621-LT-C63-50
63CF	100 mm	621-LT-C63-100

621-LTM-C16-25

Z-Shifters UHV Mini Z type

FLANGE	TRAVEL	PART NUMBER
16CF	25 mm	621-LTM-C16-25
16CF	50 mm	621-LTM-C16-50

613-RLHD700-K40
700mm Travel
Version without pumping port

Long travel O-ring sealed push-pull drive

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

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

NEW

FLANGE	TRAVEL	PART NUMBER
40CF	200 mm	613-RLD200-DP-C40
25KF	200 mm	613-RLD200-DP-K25
40KF	200 mm	613-RLD200-DP-K40
40CF	700 mm	613-RLHD700-DP-C40
40KF	700 mm	613-RLHD700-DP-K40
40CF	1000 mm	613-RLHD1000-DP-C40
40KF	1000 mm	613-RLHD1000-DP-K40

Other lengths are available on request.

KF Versions are availiable also without pumping port.

...X-Y-Z Manipulators: Page 9.6.....Rotary Motion drives: Page 9.4...

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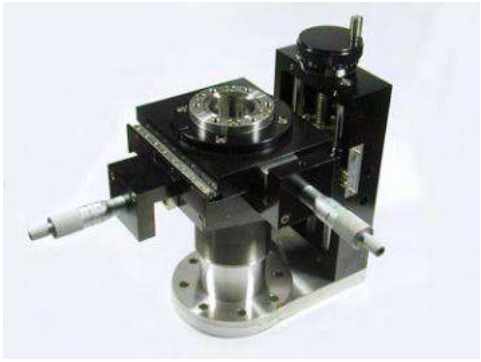
UHV Compact Manipulator CMX

The Compact Manipulator features:

- UHV Compatibility bakeable to 200°C
- 40CF Flange with 36 mm through bore
- Optional 63CF or 100CF base flange
- +/-10mm of X/Y movement by micrometer

High Precision X-Y-Z Manipulators HPMX

- 100CF mounting flange with 4 x 16CF accessory ports
- Single and dual axis Precision Rotary Drive options



621-CMX-50-C40 with 63CF base flange option

Specification Compact X-Y-Z Manipulators

Vacuum	UHV
Materials	Stainless Steel, Anodised Aluminium
Temperature	200°C max.
Bellows	Edge Welded
X-Y Motion	Micrometer driven
Operation	Manual with mm-Scale for Z travel
Flange	CF with Tapped holes at top and CF with through holes at bottom
Clear Bore	36mm
Travel	Overall height
50 mm	209 mm
100 mm	276 mm
150 mm	366 mm
200 mm	450 mm

COMPACT UHV MANIPULATORS Tapped CF Flanges, Bore 36 mm

FLANGE	TRAVEL	PART NUMBER
40CF	50 mm	621-CMX-50-C40
40CF	100 mm	621-CMX-100-C40
40CF	150 mm	621-CMX-150-C40
40CF	200 mm	621-CMX-200-C40

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
100 mm	36 mm	623-HPMX-100
150 mm	36 mm	623-HPMX-150
200 mm	36 mm	623-HPMX-200
50 mm	45 mm	623-HPMX-50-W
100 mm	45 mm	623-HPMX-100-W
150 mm	45 mm	623-HPMX-150-W
200 mm	45 mm	623-HPMX-200-W

Detail of a version with additional springs

Allectra can offer custom built sample heating and cooling stages for many appliactions.
Please call or e-mail Sales Office to discuss your requiremnents

...Precision Extended Rotary Drives: Page 9.7 .....

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
40CF	200 mm	621-ZLT-C40-200
40CF	250 mm	621-ZLT-C40-250
40CF	300 mm	621-ZLT-C40-300
40CF	400 mm	621-ZLT-C40-400
40CF	500 mm	621-ZLT-C40-500

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
63CF	50 mm	622-XY-12-C63
100CF	90 mm	622-XY-12-C100

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.

611-PRD-C40-XX

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

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

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

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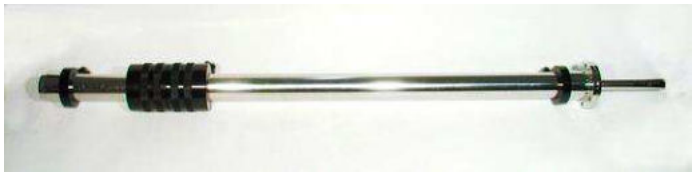
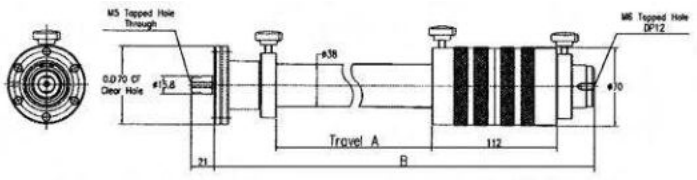
Magnetic Transporters - High Vacuum & UHV

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



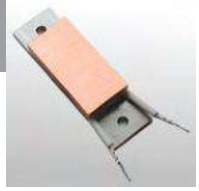
General Specification Magnetic Transporters

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
40CF	600 mm	615-MTP-0600UHV
40CF	800 mm	615-MTP-0800UHV
40CF	1000 mm	615-MTP-1000UHV

HIGH VACUUM Magnetic Transporters
Linear and Rotary Motion

FLANGE	TRAVEL	PART NUMBER
40CF	500 mm	615-MTP-0500
40CF	600 mm	615-MTP-0600
40CF	800 mm	615-MTP-0800
40CF	1000 mm	615-MTP-1000

Allectra can also offer special types of Transporters including
- Dual rotatation 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

...Fast Entry Load Locks: Sec. 15 ..... Gate Valves: Sec. 8.....

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 Bakable Micro-switch allows the door to be coupled into safety circuits to prevent, for instance, incorrect and possibly hazardous valve opening.

General Specification 640-QAD

Vacuum	UHV
Materials	SS, Aluminium hinge
Viewport	7056 glass
Viewport Seal	Metal sealed, welded
Door seal	Viton O ring
Temp.	200°C max

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

FLANGE	ID (mm)	PART NUMBER
63CF	60	640-QAD63
100CF	95	640-QAD100
160CF	150	640-QAD160

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

FLANGE	VIEW DIAM.	PART NUMBER
63CF	60 mm	640-QAD63-VP
100CF	90 mm	640-QAD100-VP
160CF	135 mm	640-QAD160-VP

640-QAD160-VP

Quick Access Doors have a tapped mounting position for a Microswitch to enable the door to be coupled into machine safety circuits.
The bakeable microswitch 360-SWITCH-3 (page 70) can be used for high temperature applications.

General Specification 640-LLC
see Chambers Section 15

640-LLC-100-63-VP

Load Lock Chambers
STAINLESS STEEL with Viton Door & Viewport

DOOR	VALVE FL.	PART NUMBER
63CF	63CF	640-LLC-63-63-VP
100CF	63CF	640-LLC-100-63-VP
100CF	100CF	640-LLC-100-100-VP
160CF	100CF	640-LLC-160-100-VP
160CF	160CF	640-LLC-160-160-VP

Complete Load locks	*POR*
Rectangular Load Locks	*POR*

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

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Wobble Sticks and Port Aligners

Wobble Sticks: Allectra can offer a selection of Wobble Sticks both single and double action with Pincer Grip Jaws or In-Line-Jaws. Please call Sales Office for details and prices.

Port Aligner: This bellows stage allows small adjustments of alignment to be made. It is useful for Electron Guns and similar devices. Please call Sales Office.

616-PA-C40

General Specification Wobble Sticks

Vacuum	UHV
Materials	316L SS for bellows and flanges
Rod	6,35 mm ø, outer length 54mm
Length in Vac.	106 ... 156mm for 50mm version 44 ...144mm for 100mm version

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

616-PPA-C40

The Precision Port aligner allows a tilt of +/- 5° and a shift of +/-3mm. Both directions are controlled by micrometer screws

Simple Wobble Stick
No locking mechanism

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

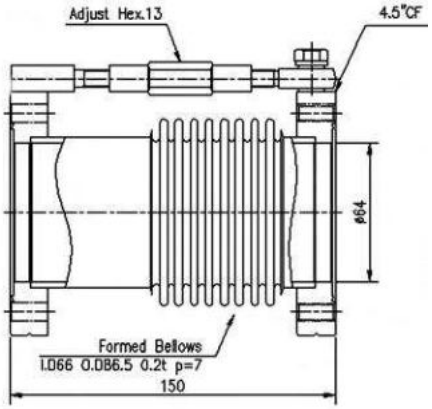
630-SWS100-C40

630-SWS50-C40

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

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

616-PA-C63



Precision Tilting Port Aligner
Micrometer adjustment

FLANGE	CLEAR BORE	PART NUMBER
40CF	36 mm	616-PPA-C40
63CF	64 mm	616-PPA-C63

...Z Shifters (Linear Translators) : Page 9.5 & 9.7.....

In-vacuum Stepper Motors

Allectra offers a range of In-Vacuum Stepper Motors both High Vacuum and UHV Types. These motors offer an alternative to mechanical linkages and bellows in vacuum. Allectra In-Vacuum Motors are conventional 2 phase stepper motors with 200 (optionally 500) steps per revolution. They may be driven by a wide range of commercially available Controllers and Drivers and are suitable for Half Step and Micro-Step Control systems. Values given here are based on the standard Bi-Polar running mode.

General Specification In-vacuum Stepper Motor

Electrical	2 phase, 4 wire Stepper Motor
Materials	SS housing, Kapton wire insulation
Phase current	1.2 A (Standard)
Sizes	19mm up to 52mm diameter
Holding Torque	see product tables
Rear Shaft Exten.	Standard (motors can be ordered without shaft extension as an option)
Steps per Revolution	200 Standard (500 as Option)

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

SIZE	HOLD TORQUE	PART NUMBER
19	3.4 mNm	671-SM19-CL-200-1.2
32	45 mNm	671-SM32-CL-200-1.2
52	405 mNm	671-SM52-CL-200-1.2

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
32	45 mNm	671-SM32-HV-200-1.2
52	405 mNm	671-SM52-HV-200-1.2

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

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
32	45 mNm	671-SM32-UHVG-200-1.2
52	405 mNm	671-SM52-UHVG-200-1.2

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
32	45 mNm	671-SM32-UHV-200-1.2
52	405 mNm	671-SM52-UHV-200-1.2

Back side view with rear shaft and outgassing holes

Options for Motors:
500 steps per revolution- not available for all types

Current per phase	0.3A, 0.6A, 1.2A, 2.5 A, 5A (depending on size)
Cryo-Motors	for 4K to 40°C
Reduction Gears	4:1 down to 256:1

Other size motors on request

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

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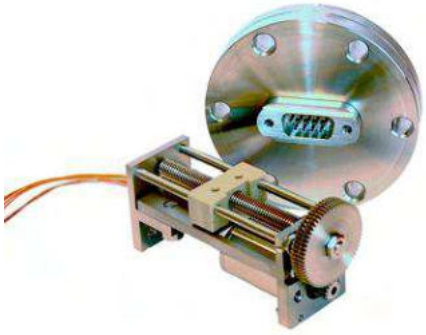
Miniature Motorised Slides

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 µm per full step. Typical repeatability is < 5 µm.
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.

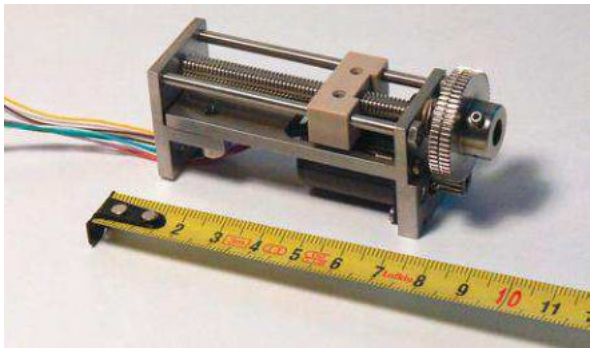


General Specification Miniature Slide 50 mm

Base Vacuum	HV 10^{-7} mbar
	UHV(G)10^{-10} mbar
	UHV 10^{-11} mbar
Material	Stainless Steel, PEEK
Resolution	1,25 µm/ full step
Dimensions	75 x 27 x 40 mm max.
Temp. rating	230°C (UHV type only)

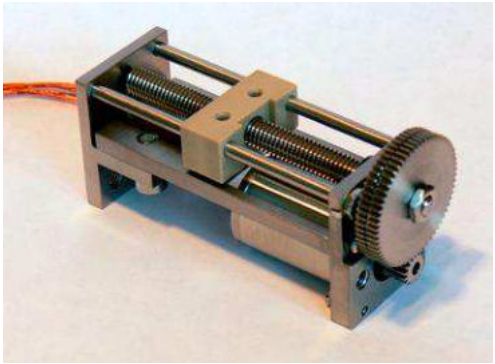
In-vacuum Motorised Slide X AXIS

VACUUM	TRAVEL	PART NUMBER
HV	50 mm	673-SLIDE50-HV
UHV-G	50 mm	673-SLIDE50-UHVG
UHV	50 mm	673-SLIDE50-UHV



In-vacuum Motorised Slide X-Y Slide

VACUUM	TRAVEL	PART NUMBER
HV	54 mm	673-SLIDE54XY-HV
UHV-G	54 mm	673-SLIDE54XY-UHVG
UHV	54 mm	673-SLIDE54XY-UHV



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.

...Sub-D Feedthroughs: Sec. 1.....Shielded Wiring: Sec. 6.....

Process Measurement and Control

10.1 SENSOR HEADS AND ACCESSORIES -> Page 10.2

Sensor Heads with water cooling, 760 mm tubes
Bare Sensor heads
Bakeable Fixed Sensor Head
Sensor Head with build-in oscillator
Single and Dual Heads with shutters

In-vacuum Cables
Replacement Quartz Crystals
Tube connectors

10.2 THIN FILM MONITORS AND CONTROLLERS -> Page 10.3

Thin Film Monitors
Thin Film Controller
Oscillators
Sensor Heads Complete Package
including Monitor, Head, Feedthrough and Cables

SENSOR HEAD FEEDTHROUGHS

- refer to Section 3.10 -

10.3 HIGH VACUUM AND UHV PRESSURE MEASUREMENT -> Page 10.4

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

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

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Sensor Heads and Accessories

- Quartz Crystal Sensor Heads
- Bakeable Sensor Heads (up to 250°C)
- Sensor Heads with built-in oscillator
- Sensor Heads with Shutter
- Water connectors

Monitors, Controllers and complete systems - see page 10.3

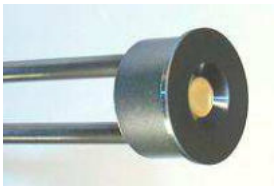
710-SH

Sensor Head Feedthrough - for details refer to Sec. 3

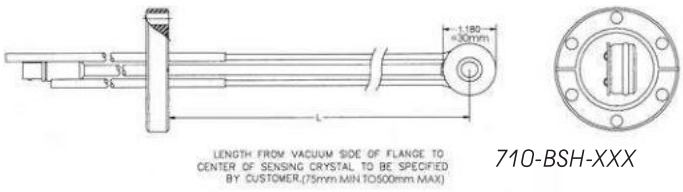
General Specification Sensor Head

Frequency	6MHz Quartz (Industry Standard)
Cooling	Water cooling (option: no cooling)
Max. Thickness	500 kÅ (Al)
Head Ø	30 mm
Length	adjustable from ca. 100 to 750 mm

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 Heads
Water Cooled and Bare Head, max. 175°C

SENSOR	WATERLINES	PART NUMBER
LOW PROFILE	YES	710-LPSH
RIGHT ANGLE	YES	710-RASH
LOW PROFILE	NO	710-SH

Bakeable Fixed Sensor Head
Geometry to order

SENSOR	TYPE	PART NUMBER
BAKEABLE	STRIAGHT	710-BSH-XXX
BAKEABLE	RT ANGLE	710-RABSH-XXX

Sensor Heads including oscillator
760 mm water connections parallel to Head

SENSOR	TYPE	PART NUMBER
LOW PROFILE	STRAIGHT	710-VSO-100

Low Profile Sensor Heads
Sensor Heads with Shutter

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

ACCESSORIES
Swagelock-connectors / Quartz Crystals / Cables

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

- For other In-Vacuum Microdot cables see Section 6.

- For Feedthroughs see Section 3.

...In-Vacuum Microdot Cables: Sec. 6....Feedthroughs for Sensor Heads: Sec. 3...

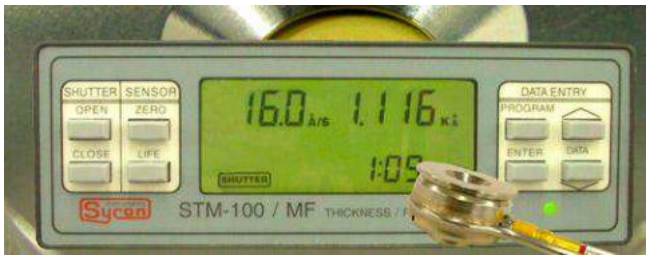
Thin Film Monitors / Complete Packages

Thin film Monitors display the evaporated thickness and the actual rate; they control the shutter and, with the built-in inputs and outputs they can switch on and off an evaporation source. The Controller STC-2000A is designed to be used for precise control of evaporation sources. Ramps and multi-layers can be done automatically.
For new installations, the STM-2XM Monitor is cost effective. It allows two heads be read out simultaneously.

710-STM-2XM

General Specification

	STM100-MF	STM-2XM	STM-1/2
Thickness Res.	1.0Å	0.13Å	0.13Å
Rate Resolution	0.1Å/s	0.01Å/s	0.01Å/s
Measures/sec	4	10	10
RS232	YES	YES	YES / USB
RS485	NO	YES	YES / NO
Sensors	1	2	1
Power supply	120/240V	90-240V	5VDC/ USB



710-STM-100

Screenshot of the PC / Labview based read-out of STM-1 and STM-2

The compact 710-STM-2 monitor with USB connection

The complete packages contain:
- Sensor Head
- In Vacuum Cable
- 40CF feedthrough for water and signal
- Tube connectors
- Oscillator (external or included)
- Air side cables
- Monitor unit / PC Interface
- Set of replacement Quartz Crystals- 10 off

Thin Film Monitors

Description	PART NUMBER
Monitor 1 Sensor	710-STM-100
Monitor 2 Sensors	710-STM-2XM
Labview-RS23/485	710-STM-1B
Labview-USB	710-STM-2
CONTROLLER	710-STC-2000A

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

PACK TYPE	MONITOR	PART NUMBER
PACK1	STM100MF	710-PACK1
2XM	STM-2XM	710-PACK-2XM
PC	STM-1B	710-PACK-PC
PC	STM-2	710-PACK-USB

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
OSCILLATOR KIT	710-OSC-PACK

For the Deposition Rate Controller STC-2000A, a data sheet with full specifications is available. Please call or e-mail the Sales Office.

Extra infomation is available for all the monitors. Please ask for the data sheet.

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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
Controller	720-WRC
Windows Software	720-SOFTW

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 Thoria 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
40CF	2 x Th(Ir)	720-IG-TH

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

FLANGE	TYPE	PART NUMBER
16KF	Pirani	720-PIR

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.

Pressure Measurement UHV Controller and Cables

DESCRIPTION		PART NUMBER
Controller	for 1 Gauge	720-IGC-1
Controller	for 2 Gauges	720-IGC-2
Cable, 3m	bakeable	720-IG-CAB3
Cable, 6m	bakeable	720-IG-CAB6
Cable, 9m	bakeable	720-IG-CAB9

CF-Hardware

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

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

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

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

11.3 CF FLANGE COPPER GASKETS -> Page 11.6

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

11.4 CF FLANGE HARDWARE -> Page 11.7

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

11.5 CF FITTINGS -> Page 11.9

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

11.6 CF EDGE WELDED BELLOWS -> Page 11.13

CF Edge Welded Bellows - 316L Stainless Steel

11.7 CF FLEXIBLE HOSES AND FLEXIBLE COUPLINGS -> Page 11.14

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

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

Materials for CF Flanges

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

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

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

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

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

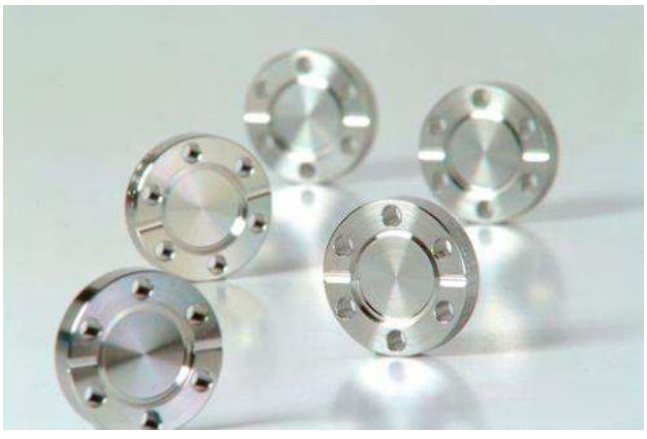
Allectra Flanges
Blank Flanges and Rotatable Inners are 316L
Rotatable Outers are 304
Special Series Flanges are entirely 316LN

Torque for screws:

CF16	4 Nm
CF40	10 Nm
≥ CF63	20 Nm

Corrosive Gases

Stainless Steel grade 316L has better resistance to corrosive gases such as Chlorine than 304. For this reason it is the preferred steel for Semiconductor Production applications.
Allectra uses 316L as standard material for flanges as well as for tubes for Vacuum Fittings.



...316L CF Flanges: Page 11.4.....316LN CF Flanges: Page 11.5.....

Standard CF Flanges 316L Stainless Steel

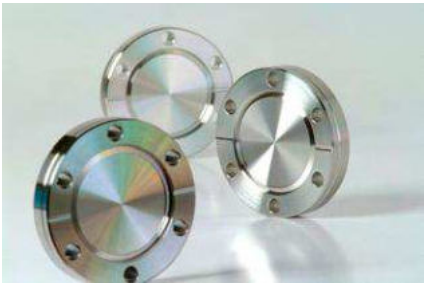
Allectra Standard CF-Flanges are designed to be sealed with an OFE Copper Gasket and are suitable for UHV and Extreme High Vacuum. They are built from High Grade Stainless Steel Type 316L (1.4404).
This material offers:

- 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
40CF	70 (2 3/4")	411-CFB40
63CF	114 (4 1/2")	411-CFB63
100CF	152 (6")	411-CFB100
160CF	202 (8")	411-CFB160
200CF	253 (10")	411-CFB200
250CF	306 (12")	411-CFB250

Fixed WELD Flange 316L Stainless Steel

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

* 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
40CF	70 (2 2/3")	411-CFB40T
63CF	114 (4 1/2")	411-CFB63T
100CF	152 (6")	411-CFB100T
160CF	202 (8")	411-CFB160T
200CF	253 (10")	411-CFB200T
250CF	306 (12")	411-CFB250T

Fixed WELD Flange TAPPED METRIC 316L Stainless Steel

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

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CF Flanges Rotatable and Allectra Rotatable

Allectra offers conventional Rotatable Flanges with 316L Inner Knife Edge Parts and a 304 Rotatable Bolt Ring which does not contact the Vacuum.
In addition, the ALLECTRA FLANGE is a Rotatable Flange where the Outer has both tapped and through holes. This enables the flange to be used as either a Rotatable Tapped or a standard Rotatable.

Specification Rotatable Flanges

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

411-CFB63R

Rotatable BLANK Flange
316L Stainless Steel inners, 304 outers

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

Rotatable WELD Flange
316L Stainless Steel inners, 304 outers

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

* Spigotted flange for tube 19od 17id

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
40CF	70 (2 3/4")	411-ACFB40
63CF	114 (4 1/2")	411-ACFB63
100CF	152 (6")	411-ACFB100
160CF	202 (8")	411-ACFB160
200CF	253 (10")	411-ACFB200
250CF	306 (12")	411-ACFB250

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

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

...Thread Lubricant: Page 11.7.....Nuts & Bolts: Page 11.7.....

Special Series CF Flanges 316LN Stainless Steel

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

General Specification CF LN flanges

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

415-CFB16-LN

FIXED BLANK Flange
Special Series 316LN Stainless Steel

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

FIXED WELD Flange
Special Series 316LN Stainless Steel

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

* Spigotted flange for tube 19od 17id

ROTATABLE WELD Flange
Special Series 316LN Stainless Steel

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

* Spigotted flange for tube 19mm OD 17mm ID

ROTATABLE BLANK Flange
Special Series 316LN Stainless Steel

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

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

...OFE Gaskets: Page 11.6.....316L Nuts & Bolts: Page 11.7.....

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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

411-CG40-W

Various sizes of Viton Gaskets

CF style OFE gaskets
Standard finish, individually packed

SIZENo	ID	PER PKT.	PART NUMBER
16CF	16	10	411-CG16-H
40CF	39	10	411-CG40-H
63CF	63	10	411-CG63-H
100CF	101	10	411-CG100-H
160CF	152	5	411-CG160-H
200CF	203	5	411-CG200-H
250CF	254	5	411-CG250-H

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

SIZENo	ID	PER PKT.	PART NUMBER
16CF	17	5	411-CG16-W
40CF	40	5	411-CG40-W
63CF	67	5	411-CG63-W
100CF	101	5	411-CG100-A
160CF	152	5	411-CG160-A
200CF	203	5	411-CG200-A
250CF	254	5	411-CG250-A

Note: Gaskets for larger CF sizes available on request

CF style OFE gaskets
Silver plated finish, individually packed

SIZENo	ID	PER PKT.	PART NUMBER
16CF	16	5	411-CG16-SP
40CF	37	5	411-CG40-SP
63CF	63	5	411-CG63-SP
100CF	101	5	411-CG100-SP
160CF	152	5	411-CG160-SP
200CF	203	5	411-CG200-SP
250CF	254	5	411-CG250-SP

Note: Annealed silver plated gaskets on requestt

CF style VITON gaskets
packs of 2

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

...Nuts & Bolts: Page 11.7.....CF Nut Plate Sets: Page 11.8.....

CF Flange Nuts and Bolts Sets

Allectra offers three grades of bolts for use with UHV flanges:
- Stainless Steel 304
- Stainless Steel 316 (low magnetic permeability)
- Silver Plated Bolts - (see Section 11.8) which are recommended for frequently baked systems

General Specification Bolts

Material	
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	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.

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

QTY.	PART NUMBER
10g	330-MOS2-10G

CF Bolt Thread Lubricant "Anti-Seize"

QTY.	PART NUMBER
30g	330-ANTISEIZE

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
M4	20	411-M4X20SET-SH
M4	30	411-M4X30SET-SH
M6	35	411-M6X35SET-SH
M6	50	411-M6X50SET-SH
M8	30	411-M8X30SET-SH
M8	55	411-M8X55SET-SH

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
M6	35	411-M6X35SET-HX
M6	55	411-M6X55SET-HX
M8	35	411-M8X35SET-HX
M8	50	411-M8X50SET-HX
M8	60	411-M8X60SET-HX
M8	70	411-M8X70SET-HX

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

SIZE	LENGTH	PART NUMBER
M4	25	411-M4-STUD-25
M6	40	411-M6-STUD-40
M8	60	411-M8-STUD-60

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
M4	20	411-M4X20SET-316SH
M4	30	411-M4X30SET-316SH
M6	25	411-M6X25SET-316SH
M6	35	411-M6X35SET-316SH
M6	55	411-M6X55SET-316HX
M8	35	411-M8X35SET-316HX
M8	50	411-M8X50SET-316HX
M8	60	411-M8X60SET-316HX
M8	70	411-M8X70SET-316HX

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

...CF to CF Adaptor Flanges: Page 11.9.....CF to KF Adaptor Flanges: Sec. 14....

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CF Flange Silver Plated Nut and Bolt Sets

CF Nut Plate Sets

Silver plated bolts are not galling and can be used without grease.
Nut Plates are very helpful if space is limited and no second key can be used for holding the nut.

For General Specification and recommended screw lengths see page 11.7

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

SIZE	LENGTH	PART NUMBER
M4	16	411-M4X16SET-SH-SP
M4	20	411-M4X20SET-SH-SP
M4	30	411-M4X30SET-SH-SP
M6	25	411-M6X25SET-HX-SP
M6	35	411-M6X35SET-HX-SP
M6	55	411-M6X55SET-HX-SP
M8	35	411-M8X35SET-HX-SP
M8	50	411-M8X50SET-HX-SP
M8	60	411-M8X60SET-HX-SP
M8	70	411-M8X70SET-HX-SP
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
40CF	3	411-NP40-3
63CF	4	411-NP63-4
100CF	8	411-NP100-8
160CF	10	411-NP160-10

Double Sided CF Flanges

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

Specification Double Sided Flanges

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

CF Double Sided BLANK Flanges
316L Stainless steel

SIZE	Thickness	PART NUMBER
16CF	7.3 mm	412-CFBD16
40CF	12.7 mm	412-CFBD40
63CF	17.5 mm	412-CFBD63
100CF	20 mm	412-CFBD100
160CF	22 mm	412-CFBD160
200CF	24.5 mm	412-CFBD200

...Thread Lubricant: Page 11.7.....OFE Gaskets: Page 11.6.....

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
63CF	16CF	412-CFZ63-16
63CF	40CF	412-CFZ63-40
100CF	40CF	412-CFZ100-40
100CF	63CF	412-CFZ100-63
160CF	40CF	412-CFZ160-40
160CF	63CF	412-CFZ160-63
160CF	100CF	412-CFZ160-100
200CF	63CF	412-CFZ200-63
200CF	100CF	412-CFZ200-100
200CF	160CF	412-CFZ200-160

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
63-40CF	75	412-CF63-40
100-40CF	95	412-CF100-40
100-63CF	95	412-CF100-63
160-100CF	105	412-CF160-100
200-100CF	115	412-CF200-100
200-160CF	115	412-CF200-160
250-200CF	125	412-CF250-200

CF Fixed Flange with Tube 316L Stainless Steel

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

CF Rotatable Allectra Flange with Tube 316L Stainless Steel

FLANGE	LENGTH	PART NUMBER
16CF	38	413-ACFT16
40CF	63	413-ACFT40
63CF	105	413-ACFT63
100CF	135	413-ACFT100
160CF	167	413-ACFT160
200CF	203	413-ACFT200
250CF	250	413-ACFT250

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

...Adaptors CF to KF or other Series : Sec. 14.....

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CF Straight Connector, Elbow, Tee and Reducing Tee

Allectra offers special Lengths on request:

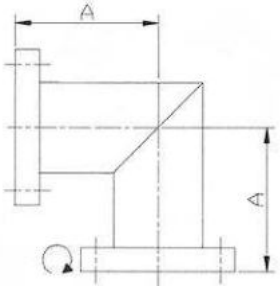
- Straight Connectors
- Elbows
- Tee Pieces
- Reducing Tees

413-CFX2-C40

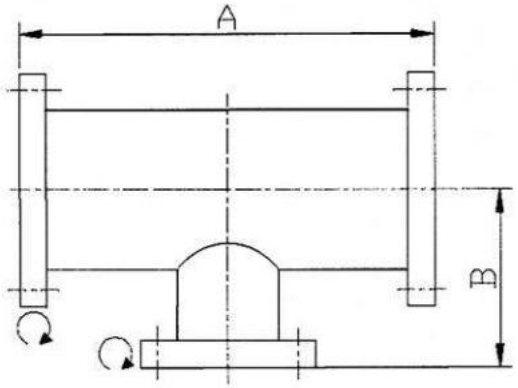
General Specification CF Fittings

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



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



413-CFX3-C40

CF Straight Connector 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER
16CF	76	413-CFX2-C16
40CF	126	413-CFX2-C40
63CF	210	413-CFX2-C63
100CF	270	413-CFX2-C100
160CF	334	413-CFX2-C160
200CF	406	413-CFX2-C200
250CF	500	413-CFX2-C250

Note: Other lengths on request

CF Elbow 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER
16CF	38	413-BOW90-C16
40CF	63	413-BOW90-C40-B
63CF	105	413-BOW90-C63
100CF	135	413-BOW90-C100
160CF	167	413-BOW90-C160
200CF	203	413-BOW90-C200
250CF	250	413-BOW90-C250

Note: Other lengths on request

CF TEE PIECE 316L Stainless Steel

FLANGE	LENGTH A/ B	PART NUMBER
16CF	76/ 38	413-CFX3-C16
40CF	126/ 63	413-CFX3-C40
63CF	210/ 105	413-CFX3-C63
100CF	270/ 135	413-CFX3-C100
160CF	334/ 167	413-CFX3-C160
200CF	406/ 203	413-CFX3-C200
250CF	500/ 250	413-CFX3-C250

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
63 - 40CF	210/75	413-CFX3-C63-C40
100 - 63CF	270/100	413-CFX3-C100-C63
160 - 100CF	334/125	413-CFX3-C160-C100
200 - 160CF	406/150	413-CFX3-C200-C160

Note: Other lengths and flange combinations on request

...OFE Gaskets: Page 11.6.....6 Way Crosses: Page 11.12.....

CF 4 Way Crosses

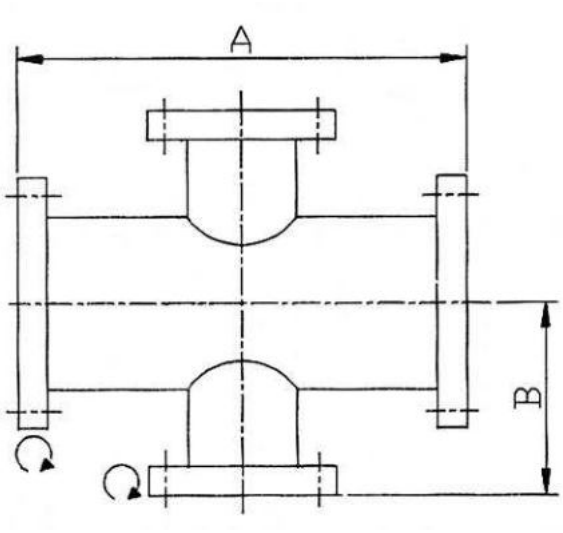
The Material is 316L (1.4404). All fittings can be delivered with 316LN (1.4429) flanges.
Special Fittings built to Order:
- Custom dimensions including asymetric types
- Other flange types incuding combinations
- Fittings with CF-, KF- and ISO-K on the same body
- Extra Rotatable Flanges or Tapped flanges
- 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

CF STANDARD 4 Way cross 316L Stainless Steel

FLANGE	LENGTH A/ B	PART NUMBER
16CF	76/ 38	413-CFX4-C16
40CF	126/ 63	413-CFX4-C40
63CF	210/ 105	413-CFX4-C63
100CF	270/ 135	413-CFX4-C100
160CF	334/ 167	413-CFX4-C160
200CF	406/ 203	413-CFX4-C200
250CF	500/ 250	413-CFX4-C250

Note: Other lengths on request

CF SPHERICAL 4 Way cross 316L Stainless Steel

FLANGE	LENGTH A/ B	PART NUMBER
16CF	76/ 38	413-CFX4-C16S
40CF	126/ 63	413-CFX4-C40S
63CF	210/ 105	413-CFX4-C63S
100CF	270/ 135	413-CFX4-C100S
160CF	334/ 167	413-CFX4-C160S
200CF	406/ 203	413-CFX4-C200S
250CF	500/ 250	413-CFX4-C250S

Note: Other lengths on request

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

CF REDUCING 4 Way Cross 316L Stainless Steel

FLANGES	LENGTHS	PART NUMBER
40 - 16CF	126/ 100	413-CFX4-C40-C16
63 - 40CF	210/ 150	413-CFX4-C63-C40
100 - 63CF	270/ 200	413-CFX4-C100-C63
160 - 100CF	334/ 250	413-CFX4-C160-C100
200 - 160CF	406/ 300	413-CFX4-C200-C160

Note: Other lengths and flange combinations on request

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

...CF Flexible Hoses: Page 11.14.....CF Edge Welded Bellows: Page 11.13.....

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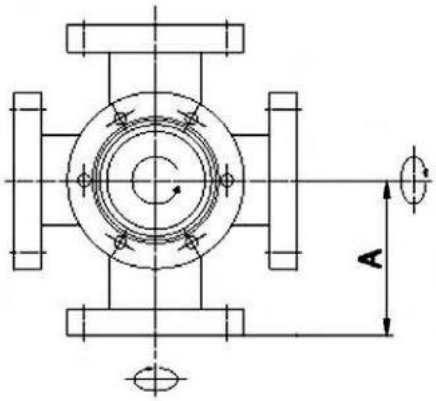
CF 6 Way Crosses

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

Specification CF Fittings

Vacuum	UHV to 10^{-12} mbar
Material	316L (1.4404) stainless Steel
Temp.	-273°C to 450°C

Fittings have opposite pairs Fixed & Rotatable Flanges



413-CFX6-C40

CF STANDARD 6 Way cross 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER
16CF	38	413-CFX6-C16
40CF	63	413-CFX6-C40
63CF	105	413-CFX6-C63
100CF	135	413-CFX6-C100
160CF	167	413-CFX6-C160
200CF	203	413-CFX6-C200
250CF	250	413-CFX6-C250

Note: Other lengths on request

413-CFX6-C40

CF SPHERICAL 6 Way cross 316L Stainless Steel

FLANGE	LENGTH A	PART NUMBER
40CF	63	413-CFX6-C40S
63CF	105	413-CFX6-C63S
100CF	135	413-CFX6-C100S
160CF	167	413-CFX6-C160S
200CF	203	413-CFX6-C200S
250CF	250	413-CFX6-C250S

Note: Other lengths on request

413-CFX6-C40S

CF REDUCING 6 Way Cross 316L Stainless Steel

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

Note: Other lengths and flange combinations on request

...OFE Gaskets: Page 11.6.....Nut & Bolt Sets: Page 11.7.....

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

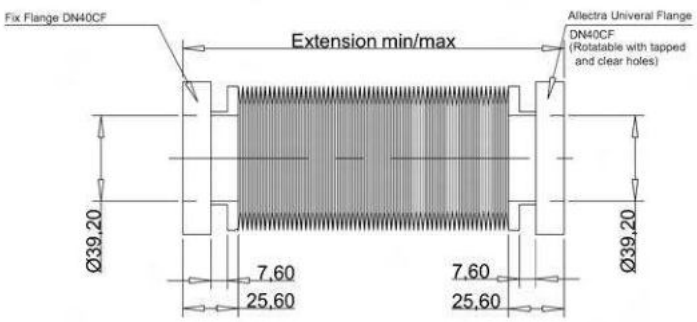
Vacuum	UHV to 10^{-12} mbar
Material	316L Stainless steel (1.4404)
Temp.	450°C max
Mag perm.	<1.05 (annealed)
Clear Bore ID	40CF 39.2mm

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
40CF	50 mm	453-EWB-C40-50
40CF	100 mm	453-EWB-C40-100
40CF	150 mm	453-EWB-C40-150



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

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

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

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

...Studding Sets: Page 11.7.....OFE Gaskets: Page 11.6.....

DE: Info@allectra.com
UK: uk@allectra.com
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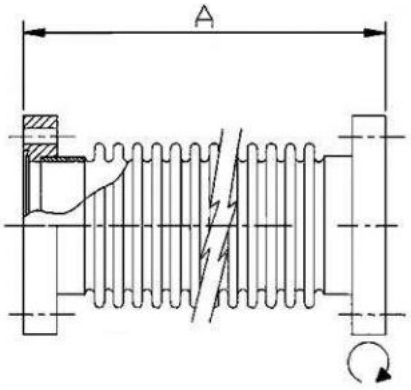
CF Flexible Hoses

CF Flexible Couplings

Flexible Hoses are made from SS 316L Hydraulically Formed Bellows.
They are used, for example, as pumping lines.
Flexible couplings are used as connections in vacuum systems where some extension and compression are required or to compensate for small degress of mis-alignment.

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
16CF	500 mm	452-HOSE-C16-0500
16CF	1000 mm	452-HOSE-C16-1000
16CF	2000 mm	452-HOSE-C16-2000
40CF	500 mm	452-HOSE-C40-0500
40CF	1000 mm	452-HOSE-C40-1000
40CF	2000 mm	452-HOSE-C40-2000
63CF	500 mm	452-HOSE-C63-0500
63CF	1000 mm	452-HOSE-C63-1000
63CF	2000 mm	452-HOSE-C63-2000

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
40CF	160 mm	452-FLX-C40-160
63CF	250 mm	452-FLX-C63-250
100CF	250 mm	452-FLX-C100-250
160CF	270 mm	452-FLX-C160-270
200CF	300 mm	452-FLX-C200-300

Note: Other lengths on request

...OFE Gaskets: Page 11.6.....CF Blank Flanges: Page 11.3.....

KF Vacuum Hardware

12.1 KF CLAMPS AND CENTRING RINGS -> Page 12.2

KF Clamps - Standard Aluminium type with Wingnut
KF Clamps - QUICK clamps with lever action
KF Centring Ring - ALUMINIUM with VITON O-Ring
KF Centring Ring - Stainless Steel with VITON O-Ring
KF Centring Ring - OUTER TYPE with Viton O-Ring
KF Centring Ring - REDUCER RING Aluminium with Viton O-Ring

12.2 KF FITTINGS -> Page 12.3

KF Flange - ALUMINIUM
KF Flange - Stainless Steeel
KF Flange with Tube - SHORT - Stainless Steel
KF Flange with Tube - LONG - Statinless Steel
KF Spare O-Rings

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

KF 4 Way Crosses - Stainless Steel
KF 6 Way Crosses - Stainless Steel

KF Transparent Viewflange - Including O-Ring and clamp
KF Mesh Protection Centring ring and O-Ring - Stainless Steel / Viton

12.3 KF FLEXIBLE HOSES -> Page 12.6

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

12.4 EVAC CLAMPS AND FITTINGS -> Page 12.8

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

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
20/25KF	16	431-KF25-C
32/40KF	16	431-KF40-C
50KF	25	431-KF50-C

KF Clamps
QUICK CLAMPS with lever action

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

KF Centring Ring
ALUMINIUM with Viton O-Ring

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

KF Centring Ring
STAINLESS STEEL with Viton O-Ring

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

KF Centring Ring
OUTER TYPE with Viton O-Ring

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

KF Centring Ring
ADAPTOR RING Aluminium with Viton O-Ring

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

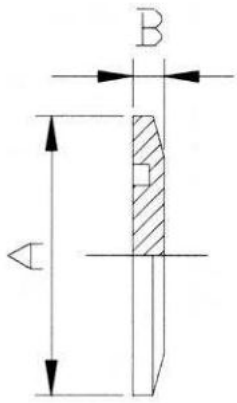
KF Flanges Aluminium & Stainless Steel

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
16KF	30	431-KF16-B-AL
25KF	40	431-KF25-B-AL
40KF	55	431-KF40-B-AL
50KF	75	431-KF50-B-AL

KF Flange STAINLESS STEEL

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

KF Flange with Tube SHORT STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER
10KF	30	433-KF10-TS
16KF	30	433-KF16-TS
25KF	30	433-KF25-TS
40KF	30	433-KF40-TS
50KF	30	433-KF50-TS
63KF	30	E32.063005.111.363

KF Flange with Tube LONG STAINLESS STEEL

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

KF Replacement O-Rings VITON

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

...KF 4 Way crosses : Page 12.5.....KF Flexible Hoses: Page 12.6.....

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KF Straight Connectors

KF Tee Pieces and Reducing Tees

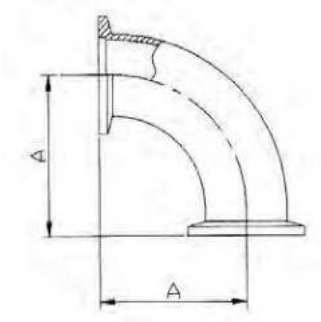
KF Elbows

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

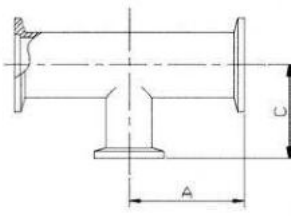
Specification KF Fittings

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

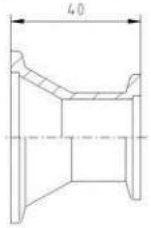


dimensions of Elbow

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
16KF	70	433-KFX2-16
25KF	70	433-KFX2-25
40KF	70	433-KFX2-40
50KF	70	433-KFX2-50
63KF	176	E33.063003.111.563

KF Elbows STAINLESS STEEL

FLANGE	A	PART NUMBER
10KF	70	433-KFL-10
16KF	70	433-KFL-16
25KF	70	433-KFL-25
40KF	70	433-KFL-40
50KF	70	433-KFL-50
63KF	88	E33.063003.150.563

KF Tee Pieces STAINLESS STEEL

FLANGE	B	PART NUMBER
10KF	60	433-KFX3-10
16KF	80	433-KFX3-16
25KF	100	433-KFX3-25
40KF	130	433-KFX3-40
50KF	140	433-KFX3-50
63KF	176	E33.063003.160.563

KF REDUCING Tee Pieces STAINLESS STEEL

FLANGE	A/C	PART NUMBER
25KF/16KF	50/40	433-KFX3-25-16
40KF/16KF	65/40	433-KFX3-40-16
40KF/25KF	65/50	433-KFX3-40-25
50KF/25KF	70/50	433-KFX3-50-25
50KF/40KF	70/65	433-KFX3-50-40

KF Conical Reducers STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER
25KF/16KF	40	433-KCR25-16
40KF/16KF	40	433-KCR40-16
40KF/25KF	40	433-KCR40-25
50KF/25KF	40	433-KCR50-25
50KF/40KF	40	433-KCR50-40
63KF/50KF	40	E33.063003.140.365

...KF Clamps & Centring Rings: Page. 12.2.....KF Flexible Hose: Page 12.6.....

KF 4 and 6 Way Crosses

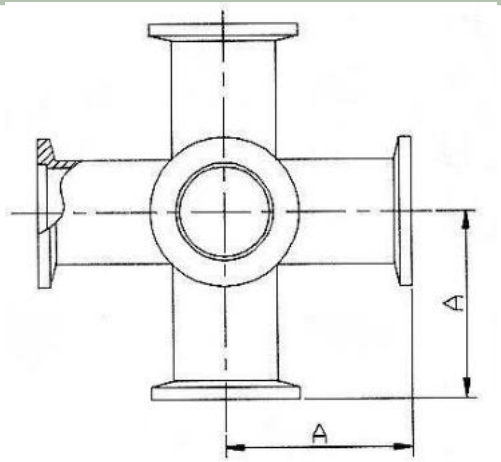
KF Transparent Viewport Flange

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
25KF	50	433-KFX4-25
40KF	65	433-KFX4-40
50KF	70	433-KFX4-50
63KF	88	E33.063003.170.563

KF 6 Way Crosses STAINLESS STEEL

FLANGE	A	PART NUMBER
16KF	40	433-KFX6-16
25KF	50	433-KFX6-25
40KF	65	433-KFX6-40
50KF	70	433-KFX6-50

KF Transparent Viewflange Including O-Ring and clamp

FLANGE	VIEW DIAM	PART NUMBER
16KF	16	120-VPGFS-K16
25KF	25	120-VPGFS-K25
40KF	40	120-VPGFS-K40
50KF	50	120-VPGFS-K50
63KF	63	120-VPGFS-K63

KF Mesh Protection Centering-Ring and O-Ring STAINLESS STEEL/ Viton

FLANGE	MESH	PART NUMBER
16KF	0.02 mm	431-KF16-MESH-SV
25KF	0.02 mm	431-KF25-MESH-SV
40KF	0.02 mm	431-KF40-MESH-SV
50KF	0.02 mm	431-KF50-MESH-SV

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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 of contraction of piping.
- Corrects misalignment problems
- A flexible and quick alternative for rigid piping in difficult locations.

Specification KF Flexible Hoses

Vacuum	High Vacuum
Temp. Range	-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
16KF	500	452-HOSE-K16-0500
16KF	1000	452-HOSE-K16-1000
16KF	2000	452-HOSE-K16-2000
25KF	500	452-HOSE-K25-0500
25KF	1000	452-HOSE-K25-1000
25KF	2000	452-HOSE-K25-2000
40KF	500	452-HOSE-K40-0500
40KF	1000	452-HOSE-K40-1000
40KF	2000	452-HOSE-K40-2000
50KF	500	452-HOSE-K50-0500
50KF	1000	452-HOSE-K50-1000
50KF	2000	452-HOSE-K50-2000

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 to16CF.

Also custom lengths are available. Please call Sales Office

Flexible Hoses - Tube Termination - Unflanged 316L Stainless Steel

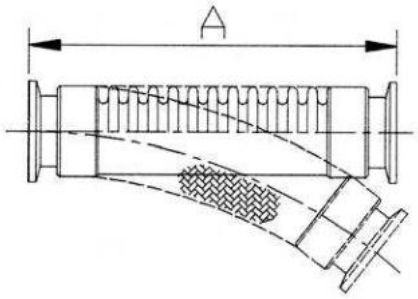
NOM. SIZE	LENGTH	PART NUMBER
DN16	500	452-HOSE16-0500
DN16	1000	452-HOSE16-1000
DN16	2000	452-HOSE16-2000
DN25	500	452-HOSE25-0500
DN25	1000	452-HOSE25-1000
DN25	2000	452-HOSE25-2000
DN40	500	452-HOSE40-0500
DN40	1000	452-HOSE40-1000
DN40	2000	452-HOSE40-2000
DN50	500	452-HOSE50-0500
DN50	1000	452-HOSE50-1000
DN50	2000	452-HOSE50-2000

...CF Flexible Hoses: Sec. 11.....Edge Welded Bellows: Sec. 11.....

KF Braided Flexible Hoses and KF PVC Hose

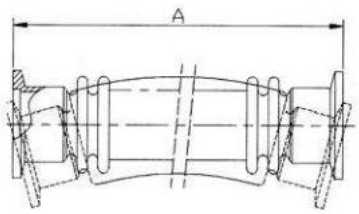
Braided Flexible Hoses are the same construction as KF Flexible Connectors but with an outer Stainless Steel Flexible Braid which protects the Hose. Flexible Hoses often run in exposed positions and these Braided Hoses are recommended for safety. If used with correct gaskets and Chain Clamps, these hoses can be used for over-pressure.

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

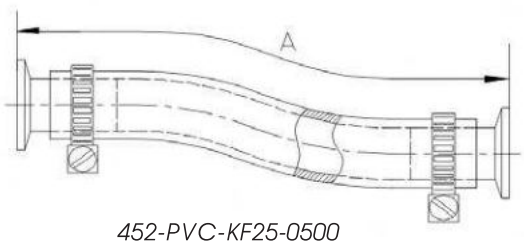


Specification 452-BHOSE

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

KF Braided Flexible Connectors STAINLESS STEEL

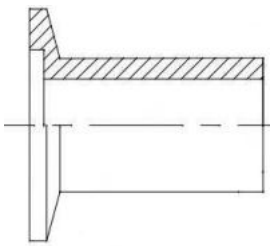
FLANGE	LENGTH	PART NUMBER
16KF	500	452-BHOSE-K16-0500
16KF	1000	452-BHOSE-K16-1000
25KF	500	452-BHOSE-K25-0500
25KF	1000	452-BHOSE-K25-1000
40KF	500	452-BHOSE-K40-0500
40KF	1000	452-BHOSE-K40-1000
50KF	500	452-BHOSE-K50-0500
50KF	1000	452-BHOSE-K50-1000
63KF	500	E35.063086.112.363
63KF	1000	E35.063086.114.363

KF PVC Hose PVC with Steel Spiral

FLANGE	LENGTH	PART NUMBER
16KF	500	452-PVC-K16-0500
16KF	1000	452-PVC-K16-1000
25KF	500	452-PVC-K25-0500
25KF	1000	452-PVC-K25-1000
40KF	500	452-PVC-K40-0500
40KF	1000	452-PVC-K40-1000
50KF	500	452-PVC-K50-0500
50KF	1000	452-PVC-K50-1000

Specification Flexible Coupling

Vacuum	High Vacuum
Hose Materials	Stainless steel
Type	Thin Wall High Flexible bellow
Travel	+/-5mm (KF16 / KF25)
	+/-10mm (KF40)



KF Flexible Coupling High-Flexibility

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

KF Flange for PVC Hose ALUMINIUM

FLANGE	FOR HOSE ID	PART NUMBER
16KF	16	452-HF16-K16-AL
25KF	25	452-HF25-K25-AL
40KF	40	452-HF40-K40-AL

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

...ISO Flexible Hoses: Sec. 13.....EVAC Chain Clamps: Page 12.8...

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EVAC Chain-Clamps and Fittings

EVAC offers a large variety of special flanges. Here a short overview. **Please ask for a complete EVAC catalogue.**

KF:

- KF Flanges in Stainless Steel 304 and 316L
- KF Aluminium components
- KF Flanges and Components like Crosses etc. in Glass (Duran) and Quartz, "EVAC Glass TM"
- KF in the size 63KF
- Metal seals for KF which allow the UHV use of KF components
- Extended temperature range -270°C to 300°C
- High quality Chain Clamps for overpressure applicatios up to 20 bar

Glass components with Chain-Clamp

ISO:

- EVAC ISO tapered flanges with flats for fast Chain-Clamp closure
- Extended vacuum range down to 10^{-11} mbar
- Extended temperature range -270°C to 300°C
- Various Chain-Clamps from "Low Cost" to "High Pressure" Versions for up to 100 bar
- Glass flanges and components up to ISO-160 size

Chain-Clamps for ISO-K 63

CeFIX© Flanges:

An all-metal seal flange system without knife edge. Lower sealing force and reusable gaskets are the highlights of this design

- Sizes from NW16 to NW250
- Gaskets compatible with standard CF flange system
- Gaskets reusable up to 10 times
- Seals in Copper, Silver plated Copper, Aluminium, Nickel
- Overpressure up to 100 bar with appropriate Chain-Clamps
- Temperature range -270°C to 300°C

CeFIX Flanges with Gasket

sTeRIc 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

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

Allectra is an authorised Distributor for EVAC products.

...KF Fittings: Pages 12.3 .....

ISO Flange System

13.1 ISO CLAMPS AND GASKETS -> Page 13.2

ISO Double Claw Clamps - Zinc plated Steel
ISO Double Claw Clamps - Stainless Steel
ISO Single Claw Clamps - Zinc plated Steel
ISO Single Claw Clamps - Stainless Steel

ISO CENTRING RING WITH O-RING

ISO Centring Ring with O-Ring - Aluminium/ Viton
ISO Centring Ring with O-Ring - Stainless Steel/ Viton

ISO BLANKFLANGES - STAINLESS STEEL

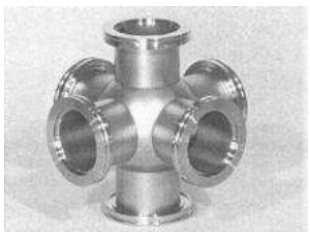
ISO-K Blank Flanges
ISO-F Rotatable Bolt Rings
ISO-F Bolt Sets for joining to Tapped Flanges

13.2 ISO-K VIEWPORT & FITTINGS -> Page 13.5

ISO-K Viton O-Ring sealed Viewports - Borosilicate Glass in Stainless Steel Holder
ISO-K Flange with tube - Stainless Steel
ISO-K Conical Reducer - Stainless Steel

ISO-K FITTINGS - STAINLESS STEEL

ISO-K Straight Connector
ISO-K Elbow
ISO-K Tee Piece
ISO-K Reducing Tee Piece



13.3 ISO-K 4- AND 6-WAY-CROSSES -> Page 13.7

ISO-K 4 Way Cross - TUBE Construction
ISO-K 4 Way Cross - SPHERE Construction
ISO-K 6 Way Cross - TUBE Construction
ISO-K 6 Way Cross - SPHERE Construction

ISO SPARE O-RINGS AND FLEXIBLE COUPLINGS

ISO Spare O-Ring - Viton
ISO Flexible Bellows Connector - Stainless Steel

DE: Info@allectra.com
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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

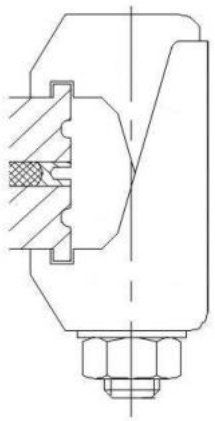
* Thread in ISO-F flanges for Single claw clamps.

ISO Double Claw Clamps ZINC PLATED STEEL

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

ISO Double Claw Clamps STAINLESS STEEL

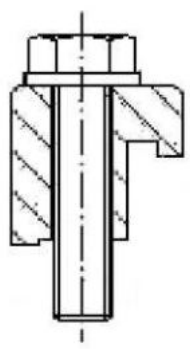
FLANGE	TYPE	PART NUMBER
63-250 ISO-K	DOUBLE	441-DCC-063-250-SS
320-630 ISO-K	DOUBLE	441-DCC-320-630-SS



441-DCC

ISO Single Claw Clamps ZINC PLATED STEEL

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



441-SCC

ISO Single Claw Clamps STAINLESS STEEL

FLANGE	TYPE	PART NUMBER
63-100 ISO-K	SINGLE	441-SCC-063-100-SS
160-250 ISO-K	SINGLE	441-SCC-160-250-SS
320-500 ISO-K	SINGLE	441-SCC-320-500-SS
630 ISO-K	SINGLE	441-SCC-630-SS

...ISO Flanges: Page 13.3.....ISO Centring Rings: Page 13.1.....

ISO Centring Ring with O-Ring

Allectra Centring Rings have Aluminium or Stainless Steel Carriers with Viton O-Rings as standard.
NBR (Buna) O-Ring with Aluminium Carrier are available on request.
The Centring Ring consists of an Inner Stainless Steel or Aluminium Ring, a Viton O-Ring. If required an Outer Ring is available as an option.
Allectra can deliver High Temperature Viton O-Rings for continuous use up to 200°C!

General Specification Centring Ring

Viton O-Ring	
Max. Temp.	200°C
Continuous	150°C
NBR (Buna) O-Ring	
Max. Temp.	100°C
Continuous	80°C

ISO Centring ring with optional outer ring. The outer ring is aluminium for all types.

ISO Centring Ring with O-Ring ALUMINIUM/ Viton

FLANGE	TYPE	PART NUMBER
63 ISO	AI/VITON	441-ISO63-CR-AV
100 ISO	AI/VITON	441-ISO100-CR-AV
160 ISO	AI/VITON	441-ISO160-CR-AV
200 ISO	AI/VITON	441-ISO200-CR-AV
250 ISO	AI/VITON	441-ISO250-CR-AV
320 ISO	AI/VITON	441-ISO320-CR-AV
400 ISO	AI/VITON	441-ISO400-CR-AV
500 ISO	AI/VITON	441-ISO500-CR-AV
630 ISO	AI/VITON	441-ISO630-CR-AV

ISO Centring Ring with O-Ring ALUMINIUM/ Viton WITH OUTER RING

FLANGE	TYPE	PART NUMBER
63 ISO	AI/VITON	441-ISO63-CR-AV-OR
100 ISO	AI/VITON	441-ISO100-CR-AV-OR
160 ISO	AI/VITON	441-ISO160-CR-AV-OR
200 ISO	AI/VITON	441-ISO200-CR-AV-OR
250 ISO	AI/VITON	441-ISO250-CR-AV-OR

ISO Centring Ring with O-Ring STAINLESS STEEL/ Viton

FLANGE	TYPE	PART NUMBER
63 ISO	SS/VITON	441-ISO63-CR-SV
100 ISO	SS/VITON	441-ISO100-CR-SV
160 ISO	SS/VITON	441-ISO160-CR-SV
200 ISO	SS/VITON	441-ISO200-CR-SV
250 ISO	SS/VITON	441-ISO250-CR-SV
320 ISO	SS/VITON	441-ISO320-CR-SV
400 ISO	SS/VITON	441-ISO400-CR-SV
500 ISO	SS/VITON	441-ISO500-CR-SV
630 ISO	SS/VITON	441-ISO630-CR-SV

ISO Centring Ring with O-Ring STAINLESS STEEL/ Viton WITH OUTER RING

FLANGE	TYPE	PART NUMBER
63 ISO	SS/VITON	441-ISO63-CR-SV-OR
100 ISO	SS/VITON	441-ISO100-CR-SV-OR
160 ISO	SS/VITON	441-ISO160-CR-SV-OR
200 ISO	SS/VITON	441-ISO200-CR-SV-OR
250 ISO	SS/VITON	441-ISO250-CR-SV-OR

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

...ISO Flanges: Page 13.4.....ISO Spare O Rings: Page 13.8.....

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ISO Blank flanges

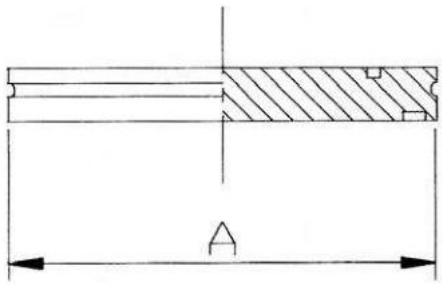
Size from 63 ISO-K to size 630 ISO-K are available.
Allectra offers:

- Blank Flanges
- Weld Flanges to order
- ISO Rotatable Bolt Rings to convert ISO-K Clamp Flanges to ISO-F Bolt Flanges.

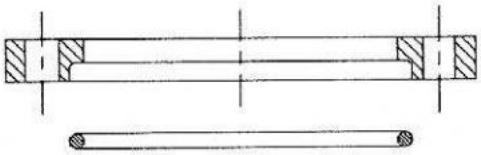
ISO-F (LF Bolt Flanges) available on request.
Aluminium ISO-K Flanges are available to order.

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.

ISO-K Blank Flanges STAINLESS STEEL

FLANGE	A (mm)	PART NUMBER
63 ISO-K	95	441-ISO63-B
100 ISO-K	130	441-ISO100-B
160 ISO-K	180	441-ISO160-B
200 ISO-K	240	441-ISO200-B
250 ISO-K	290	441-ISO250-B
320 ISO-K	370	441-ISO320-B
400 ISO-K	450	441-ISO400-B
500 ISO-K	550	441-ISO500-B
630 ISO-K	690	441-ISO630-B

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-ISO63-COL
100 ISO-F	165	441-ISO100-COL
160 ISO-F	225	441-ISO160-COL
200 ISO-F	285	441-ISO200-COL
250 ISO-F	335	441-ISO250-COL
320 ISO-F	425	441-ISO320-COL
400 ISO-F	510	441-ISO400-COL
500 ISO-F	610	441-ISO500-COL
630 ISO-F	750	441-ISO630-COL

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-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
100 ISO-F	M8-20	411-M8X20
160 ISO-F	M10-30	411-M10X30
200 ISO-F	M10-30	411-M10X30
250 ISO-F	M10-30	411-M10X30
320 ISO-F	M12-40	411-M12X40
400 ISO-F	M12-40	411-M12X40
500 ISO-F	M12-40	411-M12X40
630 ISO-F	M12-40	411-M12X40

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

...ISO Centring Rings: Page 13.3.....ISO Bored Flange with Tube: Page 13.5.....

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

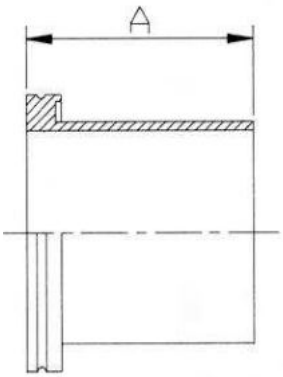
ISO-K Viton O-Ring Sealed Viewports
Borosilicate Glass in Stainless Steel Holder

FLANGE	VIEW ø	PART NUMBER
63 ISO-K	72	120-VPGO-ISO63
100 ISO-K	104	120-VPGO-ISO100
160 ISO-K	152	120-VPGO-ISO160
200 ISO-K	210	120-VPGO-ISO200

120-VPGO-ISO063 ISO-K Viewport

ISO-K Flange with tube
STAINLESS STEEL

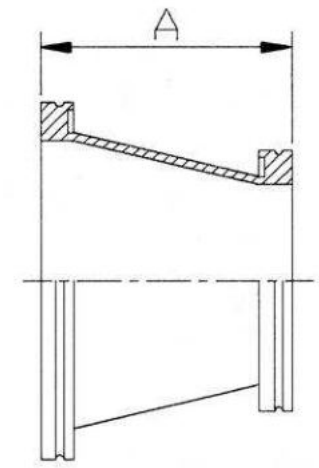
FLANGE	OD/ ID	PART NUMBER
63 ISO-K	76/70	441-ISO63-TU
100 ISO-K	108/102	441-ISO100-TU
160 ISO-K	159/153	441-ISO160-TU
200 ISO-K	219/213	441-ISO200-TU
250 ISO-K	267/261	441-ISO250-TU
320 ISO-K	324/318	441-ISO320-TU
400 ISO-K	408/400	441-ISO400-TU
500 ISO-K	508/500	441-ISO500-TU
630 ISO-K	660/650	441-ISO630-TU



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

ISO-K Conical Reducer
STAINLESS STEEL

FLANGE	LENGTH A	PART NUMBER
100/ 63 ISO-K	100 mm	441-ISO100-63-CR
160/100 ISO-K	120 mm	441-ISO160-100-CR
200/160 ISO-K	140 mm	441-ISO200-160-CR
250/200 ISO-K	160 mm	441-ISO250-200-CR



441-ISO100-63-CR ISO-K Conical Reducer
For length A see product table

...Other Viewports: Sec. 7.....ISO 4 and 6 way crosses: Page 13.7.....

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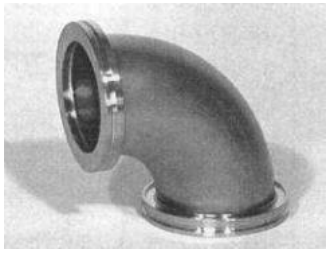
ISO-K Fittings

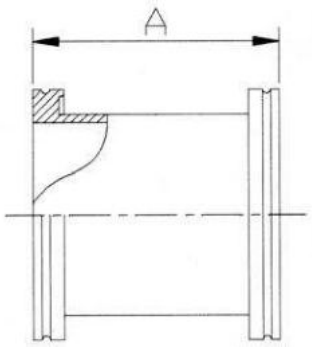
- 90° Elbows
- Tee Pieces
- Reducing Tee Pieces

For fittings from DN 320 ISO-K to DN 630 ISO-K please call Sales Office.

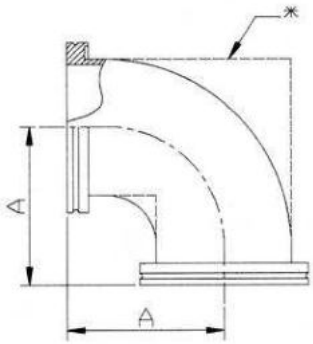


General Specification

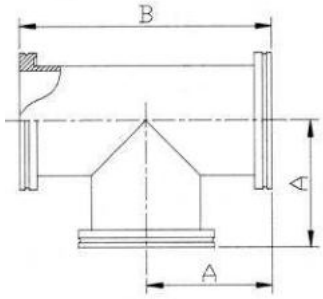
Vacuum	to 10^{-9} mbar
Material	Stainless Steel
Wall Thickness	3 mm (typical up to DN320)



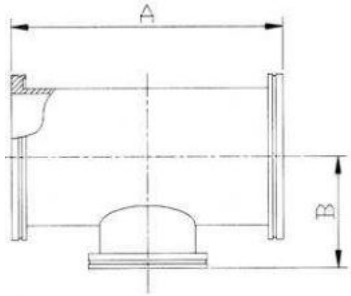
443-ISO063-X2 Straight Connector
For full dimensions, please ask for ISO Fittings data sheet



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 Straight Connector STAINLESS STEEL

FLANGE	LENGTH	PART NUMBER
63 ISO-K	100 mm	443-ISO63-X2
100 ISO-K	100 mm	443-ISO100-X2
160 ISO-K	100 mm	443-ISO160-X2
200 ISO-K	100 mm	443-ISO200-X2
250 ISO-K	100 mm	443-ISO250-X2

Note: Larger sizes available to order

ISO-K Elbow STAINLESS STEEL

FLANGE	LENGTH A	PART NUMBER
63 ISO-K	88 mm	443-ISO63-L
100 ISO-K	108 mm	443-ISO100-L
160 ISO-K	138 mm	443-ISO160-L
200 ISO-K	178 mm	443-ISO200-L
250 ISO-K	208 mm	443-ISO250-L

Note: Larger sizes available to order

ISO-K Tee Piece STAINLESS STEEL

FLANGE	LENGTH A	PART NUMBER
63 ISO-K	88 mm	443-ISO63-X3
100 ISO-K	108 mm	443-ISO100-X3
160 ISO-K	138 mm	443-ISO160-X3
200 ISO-K	178 mm	443-ISO200-X3
250 ISO-K	208 mm	443-ISO250-X3

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-ISO100-63-X3
160-100 ISO-K	276 / 130	443-ISO160-100-X3
200-160 ISO-K	356 / 160	443-ISO200-160-X3
250-200 ISO-K	416 / 190	443-ISO250-200-X3

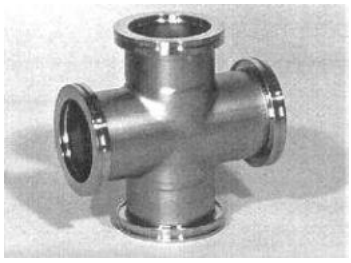
Note: Other sizes on request

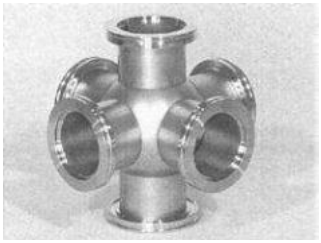
...ISO 4 and 6 way Crosses: Page 13.7.....ISO Flexible Connectors: Page 13.8.....

ISO-K 4 and 6 Way Crosses

- 4 Way Crosses
- Spherical 4 Way Crosses
- 6 Way Crosses
- Spherical 6-Way Crosses

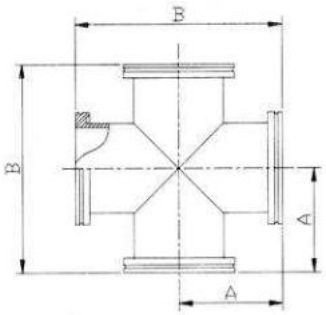
The Spherical Crosses have greatly increased work space in the centre.
Special fittings including Reducing Crosses - Please call Sales Office





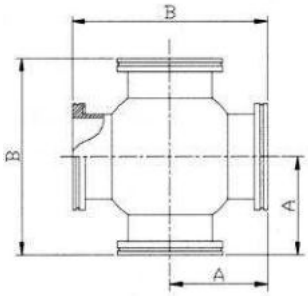
Specification Crosses

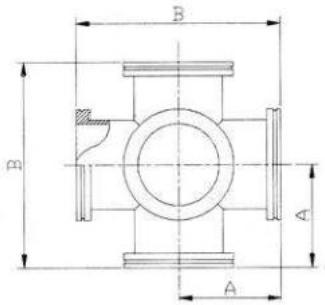
Vacuum	to 10^{-9} mbar
Material	Stainless Steel
Wall Thickness	3 mm (typical up to DN320)



443-ISO063-X4
Length B = 2x A

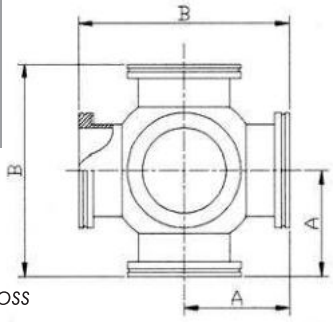
Spherical type 6-Way Cross with ISO-K Flanges.
For full dimensions, please ask for data sheet





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-ISO63-X4
100 ISO-K	108 mm	443-ISO100-X4
160 ISO-K	138 mm	443-ISO160-X4
200 ISO-K	178 mm	443-ISO200-X4
250 ISO-K	208 mm	443-ISO250-X4

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-ISO63-X4S
100 ISO-K	108 mm	443-ISO100-X4S
160 ISO-K	138 mm	443-ISO160-X4S
200 ISO-K	178 mm	443-ISO200-X4S
250 ISO-K	208 mm	443-ISO250-X4S

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-ISO63-X6
100 ISO-K	108 mm	443-ISO100-X6
160 ISO-K	138 mm	443-ISO160-X6
200 ISO-K	178 mm	443-ISO200-X6
250 ISO-K	208 mm	443-ISO250-X6

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-ISO63-X6S
100 ISO-K	108 mm	443-ISO100-X6S
160 ISO-K	138 mm	443-ISO160-X6S
200 ISO-K	178 mm	443-ISO200-X6S
250 ISO-K	208 mm	443-ISO250-X6S

Note: Larger sizes available to order

...ISO Blanking Flanges : Page 13.4.....ISO Flexible Connectors : Page 13.8....

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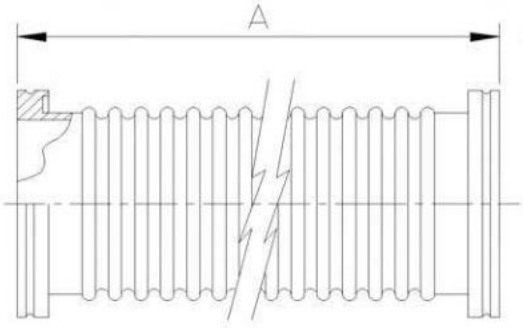
ISO Flexible Couplings

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-ISO63-0500
63 ISO-K	1000 mm	452-HOSE-ISO63-1000
100 ISO-K	500 mm	452-HOSE-ISO100-0500
100 ISO-K	1000 mm	452-HOSE-ISO100-1000

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-ISO63-O
100 ISO	5	441-ISO100-O
160 ISO	5	441-ISO160-O
200 ISO	5	441-ISO200-O
250 ISO	5	441-ISO250-O
320 ISO	5	441-ISO320-O
400 ISO	5	441-ISO400-O
500 ISO	5	441-ISO500-O
630 ISO	5	441-ISO630-O

...KF Flexible Connectors: Sec. 12 .....ISO Centring Rings: Page 13.3.....

ADAPTORS AND SPECIAL HARDWARE

14.1: ADAPTORS CF TO OTHER TYPES

-> Page 14.2

Adaptors from CF to KF
Adaptors from CF to ISO-K
Adaptors from CF to female VCR

14.2 ADAPTORS KF TO OTHER TYPES

-> Page 14.3

Adaptors from KF to ISO-K
Adaptos KF to Swagelock

14.3 PRESSURE BURST DISCS

-> Page 14.4

Pressure Burst Discs- Stainless Steel
Standard and Low Pressure versions

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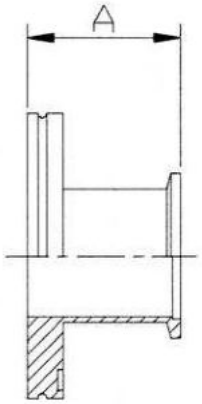
Adaptors from CF to KF, ISO-K and VCR

Between Series Adaptors are a useful and simple way of connecting components from different flange systems. Allectra offers Adaptors between all the combinations of the most common systems.
Custom adaptors for any flange type to any other are available to order.

Various Glass to Metal Adapters are offered on request. Please ask for details.

General Specification Adaptors

Vacuum	UHV
Material	Stainless Steel
Overall length	A
16CF to 16/25KF	36mm
40CF to 25KF	36mm
40CF to other sizes	50mm
63CF and larger	50mm
CF to ISO-K	90mm



Glass to Metal adapters are available in a large variety, for example Pyrex or Quartz - open or doomed, with bellow...
Please call Sales Office

Adaptors from CF to KF Stainless Steel

FLANGE 1	FLANGE 2	PART NUMBER
16CF	16KF	460-C16-K16
16CF	25KF	460-C16-K25
40CF	25KF	460-C40-K25
40CF	40KF	460-C40-K40
63CF	40KF	460-C63-K40
100CF	40KF	460-C100-K40

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-ISO63
100CF	100 ISO-K	460-C100-ISO100
160CF	160 ISO-K	460-C160-ISO160
200CF	200 ISO-K	460-C200-ISO200

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
16CF	1/4" (6.35mm)	460-C16-VCRF635

Note: Other flange combinations available on request

...CF Hardware, Gaskets: Sec. 11.....CF to CF types: Sec. 11.....

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	High Vacuum
Materials	Stainless Steel

Conical adapters ISO-K 63 to KF are available on request

New in our product range:

Feedtrhroughs for liquds and LN, with tube endings, Swagelock connectors or VCR couplers.
Please ask for more information.

Adaptors from KF to ISO-K Stainless Steel A = 40mm

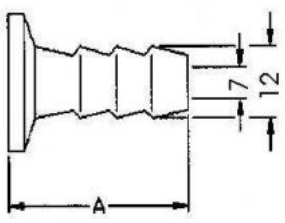
FLANGE 1	FLANGE 2	PART NUMBER
25KF	63 ISO-K	460-ISO63-K25
40KF	63 ISO-K	460-ISO63-K40
50KF	63 ISO-K	460-ISO63-K50
40KF	100 ISO-K	460-ISO100-K40
50KF	100 ISO-K	460-ISO100-K50

Note: Other flange combinations available on request

KF to Swagelock Adaptors STAINLESS STEEL

FLANGE	SWG SIZE	PART NUMBER
16KF	1/8"(3.17mm)	461-K16-SWG3.2
16KF	1/4"(6.35mm)	461-K16-SWG6.4
16KF	3/8"(9.52mm)	461-K16-SWG9.5

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-SS
25KF	40mm	461-HN12-K25-SS
40KF	40mm	461-HN12-K40-SS
50KF	40mm	461-HN12-K50-SS

Adaptors from KF to 12mm ID PVC Hose Aluminium A = 40mm

FLANGE	A	PART NUMBER
16KF	40mm	461-HN12-K16-AL
25KF	40mm	461-HN12-K25-AL
40KF	40mm	461-HN12-K40-AL

Rubber Hose adapter in Stainless Steel -KF16 (left) and Aluminium-KF40

...KF Hardware and O rings: Sec. 12.....KF to KF Conical reducers: Sec. 12....

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Pressure Burst Discs

Pressure Burst Discs are Flange mounted Membranes which are designed to rupture and release gas in the event of potentially hazardous pressures greater than atmospheric pressure.
Two versions are offered:

- Standard type with a max. overpressure of 1.7 bar
- Low Pressure type with max. 0.8 bar overpressure (0.8 bar gauge)

They are available on 16CF / 40CF /16KF / 25KF / 40KF

Standard Version
461-PBD-C40

Specification Burst Discs Standard and Low Pressure

	Standard	Low Pressure
Vacuum	UHV	
Construction	All Metal SS	
Temperature	-200 ... +350°V	
Bursting pressure		
typ. (differential)	1.2 ... 1.4 bar	0.6 ...0.8 bar
max. (@22°C)	1.7 bar	0.8 bar
Mounting flanges	16CF / 40CF / 16KF / 25KF /40KF	
Flow rates	150l/s (40CF/40KF), 35l/s (16CF/16KF)	
Opt. outlet flange for gas recovery	DN50KF	

Pressure Burst Disc CF Flange All Metal

FLANGE	HIGHT	PART NUMBER
16CF	48	461-PBD-C16
40CF	24	461-PBD-C40

Pressure Burst Disc KF Flanges All Metal

FLANGE	HIGHT	PART NUMBER
16KF	48	461-PBD-K16
25KF	48	461-PBD-K25
40KF	23	461-PBD-K40

Standard Version
461-PBD-C16
Body diameter 45mm

A leaking LN2 cooling system can cause a very rapid pressure rise, for health and savety reasons all vacuum vessels with such a risk require a pressure burst disk.

For a full data sheet please ask the sales office or download at *www.allectra.com*

Low Pressure Burst Disc CF Flange All Metal

NEW

FLANGE	HIGHT	PART NUMBER
16CF	72	461-PBD-C16-LP
40CF	72	461-PBD-C40-LP

Low Pressure Burst Disc KF Flanges All Metal

NEW

FLANGE	HIGHT	PART NUMBER
16KF	71	461-PBD-K16-LP
25KF	71	461-PBD-K25-LP
40KF	71	461-PBD-K40-LP

Low Pressure Version
461-PBD-C40-LP
Body diameter 59mm

Pressure Burst Discs with gas recovery can be built to order. Please ask Sales Office for details.

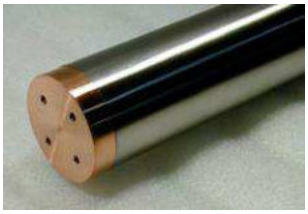
...CF Gaskets: Sec. 11.....KF Centring Rings: Sec. 12.....

UHV AND HIGH VACUUM CHAMBERS

15.1 UHV AND HV CHAMBERS

-> Page 15.2

Stainless Steel UHV Chambers
Stainless Steel HV Chambers
Chamber Options



15.2 SPECIAL FABRICATIONS

-> Page 15.3

Special vacuum Fabrications
Vacuum Equipment Assembly
Non-magnetic Chamber
Mu-metal Shields
Mu-metal Chambers

15.3 STANDARD CHAMBERS

-> Page 15.4

Fast Entry Lock (FEL) Chambers
Complete Load Locks
Variation of Standard Fittings

Chamber Types

Geometry	Material	Application
Cylinder	Stainless Steel, Aluminium, Mu-Metal	General Purpose UH and UHV
Sphere	Stainless Steel, Aluminium, Mu-Metal	Surface Science AFM/ STM
Cube with door	Stainless Steel, Aluminium	HV, Box coating, deposition

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UHV and High Vacuum Chambers

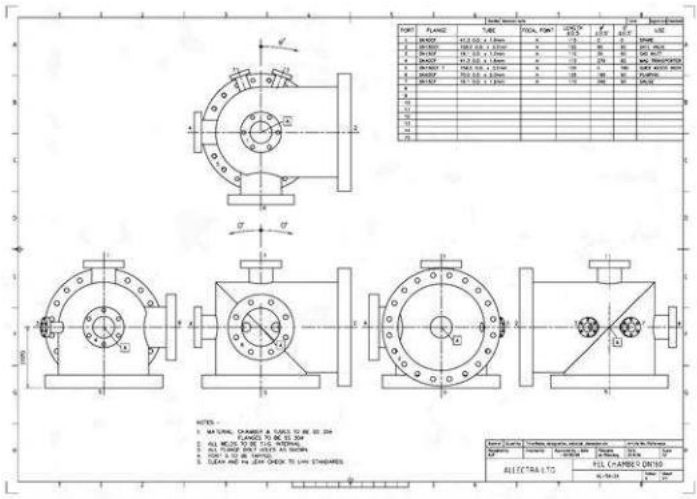
Allectra offers custom built chambers for UHV and HV systems

- 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 x 10^{-12} mbar
	HV 5 x 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.

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

A Special Purpose high dimensional accuracy chamber with Custom flanges

Send us your sketch for an initial 3D check and a quote.

...Standard CF fittings 4 and 6 way crosses: Sec. 11.....

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.

...Blanking Flanges 316L: Sec. 11.....Blanking Flanges 316LN: Sec. 11.....

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Fast Entry Lock (FEL) Chamber

Modified Fittings

Allectra offers a standard design of Fast Entry Lock chamber which is very versatile and which provides the maximum access and viewing diameters to the sample carrier position.

Also available are a range of modified standard fittings like 4 way crosses which can be easily and cheaply fitted with extra ports or simple modifications.

Fast Entry Lock Chamber with Quick Access Door including Viewport

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 Sec. 9)

FEL Chambers Stainless Steel with Viton sealed DOOR & Viewport

DOOR (2)*	GV (4)*	PART NUMBER
63CF	63CF	640-LLC-63-63-VP
100CF	63CF	640-LLC-100-63-VP
100CF	100CF	640-LLC-100-100-VP
100CF	160CF	640-LLC-100-160-VP
160CF	160CF	640-LLC-160-160-VP

* 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
Port7	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.

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
100CF	63CF	640-LLS-100-63-VP-600
100CF	100CF	640-LLS-100-100-VP-600
160CF	100CF	640-LLS-160-100-VP-600
160CF	160CF	640-LLS-160-160-VP-600

* Port numbers - see Table on left

Modified Standard Fittings

Allectra offers a cost effective way of building a custom vacuum chamber. Starting with a Standard CF or ISO fitting (Sec. 13), ports can be added, taken away or port sizes changed as required. In this case the price is the cost of the standard fitting plus the cost of the changes . If these are quite simple, usually no drawing is required.

Please ask Sales Office for details.

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.

...Quick Access doors: Sec. 9.....Magnetic Transporters: Sec. 9....

Part Number Index

On the following pages all part codes used in the catalogue are listed with the page number they appear.

Allectra Part Codes start with a 3 digit number. This number helps, to find the section, where the item is listed. Here a short summary of this system:

Part code starts with	Main Item	Section
1..	Viewports, Optics	7
11.	Quartz / Fused silica Viewports	7.5 / ... / 7.9
12.	Kodial Viewports	7.3
13.	Special materials Viewports	7.4 /7.10 / 7.11
15.	Fibre optics	7.13 / ... / 7.17
2..	Electrical f/t	1 / 2 / 3 / 4 / 5
21.	Sub-D Feedthroughs, connectors	1
22.	Circular Miniature Feedthroughs	2
241	Coaxial	3
242	Coaxial 50 Ohm	3.3 / ... / 3.7 / 3.9 / 3.11 / 3.12
25.	High voltage Coaxial	3.10
26.	"Classic" electrical Feedthroughs	4
262	Thermocouple Feedtrhoughs	5
27.	Ceramic Breaks	4.12
3..	Cables and wires	6
311	Kapton insulated cables	6.2 / 6.3 / 6.4
33.	Glue and Grease	6.11
36.	Connectors and crimp pins	4.14 / 6.8 / 6.9
38.	Ready made cables	6.6 / 6.7 / 6.8
4..	Hardware	11 / 12 / 13 / 14 /16
41.	Flanges and Hardware CF	11
43.	Flanges and Hardware KF	12
44.	ISO-K Components	13
45.	Hoses	14
5..	Valves	8
511	Gate Valves and Right Angle Valves	8.2 / 8.3
512	All Metal Valves	8.5
514	Leak Valves	8.6
6..	Motion and Manipulation	9 / 15
61.	Linear and Rotary drives	9.2 / 9.3 / 9.4
62.	Manipulators (Z / XY / XYZ)	9.5 / 9.6
64.	Load-Lock Components	15.4
67.	In-Vacuum Motors and Slides	9.11
7..	Thin Film and Pressure Measurement	10
71.	Thin Film components	10.2 / 10.3
72.	Pressure measurement	10.4
8..	Chamber and custom fabrication	15 / 16
E	EVAC Components	12.8 / see separate catalogue

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