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CATALOGUE / PRICE LIST
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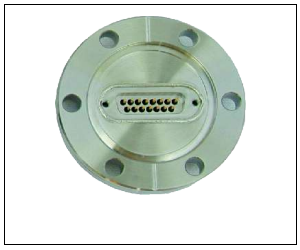


UHV Viewports

Sub-D Feedthroughs

Multi-Pin Feedthroughs

Co-axial Feedthroughs

Power and Thermocouple Feedthroughs

Vacuum Cables and Connectors

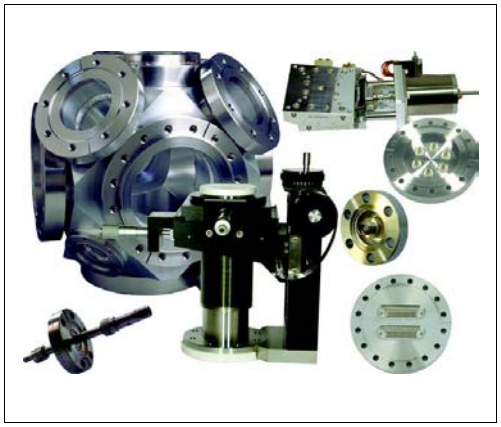
CF Flanges and Fittings

UHV Manipulators , Rotary and Linear Drives

KF and ISO-K Components

In-Vacuum Stepper Motors

UHV and High Vacuum Chambers and Fabrications



New for 2005

- **316LN Flanges, Gate Valves , UHV Manipulators**
- **Film Thickness Monitor,**
- **New Types of Feedthroughs and Kapton Wire**
- **Optical Fibres for UHV**

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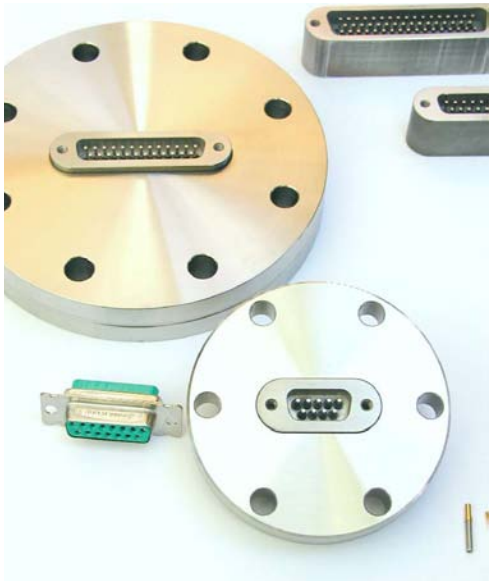
Allectra - Innovation in Vacuum Technology

UHV and High Vacuum Components 2005



Welcome to the New Allectra Catalogue.

We are pleased to introduce Allectra, a new enterprise started in February 2002 to provide innovative products for UHV and High Vacuum at keen prices. Allectra offers a comprehensive range of over 600 components which include many new ideas as well as tried and tested solutions.

We deliver our own production from specialised workshops in Germany and the United Kingdom. In addition we are always looking for good deals for our customers and we offer products from other manufacturers which meet our exacting standards of quality and value for money.

Our UHV chamber facility has advanced modern machinery and can can offer fabrication to the highest quality standard. UHV chambers are fabricated in Mu-Metal as well as Stainless Steel and Aluminium.

The Allectra product range includes;

- Electrical Feedthroughs including sub-D types
- Viewports in Glass , Sapphire and Quartz
- SMA , MHV , BNC and SHV feedthroughs
- Kapton Cables and Connectors
- Flanges and Fittings in high quality 316L Stainless Steel
- Rotary and Linear Motion Drives
- UHV Manipulators
- The new Allectra 'Universal Flange'
- All Metal UHV Valves and UHV Gate Valves
- Bi-Metal flanges Aluminium-Stainless Steel
- Vacuum Stepper Motors and Precision Mechanisms

Additionally we offer a custom manufacturing service:

- Special Vacuum Components to Order
- Vacuum Chambers in Stainless Steel, Aluminium and Mu-Metal

We look forward to hearing from you.

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Technical Notes

Nominal Internal Diameters

Allectra uses the Internationally accepted system of nominal internal diameters (DN) to identify flange sizes. These correspond with other naming conventions as follows. These apply to Copper Gasket Flanges CF , Clamp Flanges (Klein Flanges) KF and ISO-K flanges (LF). The sizes DN25 and DN50 are not in common use for CF Flanges.

DN	NW	Typical Tube I.D. mm	US Tube Size(O.D.) inches	CF Flange O.D. mm	CF Flange OD inches
DN16	16	16	3/4″	34	1 1/3″
DN25	25	25	1″	(54)	(2 1/8″)
DN40	35	38	1 1/2″	70	2 3/4″
DN50	50	50	2″	(86)	(3 3/8″)
DN63	63	66	2 1/2″	114	4 1/2″
DN100	100	102	4″	150	6″
DN160	150	150	6″	203	8″
DN200	200	203	8″	254	10″

Choice of Stainless Steel for UHV

The best choice of stainless steel for UHV Components is the type 316LN (1.4429). It has the lowest magnetic permeability the best stability after working and good TIG welding characteristics. It also has very good corrosion resistance particularly against Chloride compounds. Unfortunately this material is quite expensive and is generally not available in the form of tubes or sheets.

The best compromise between performance, price and availability is the close relative 316L (1.4404). This material has practically the same welding characteristics as 316LN. The corrosion resistance and mechanical hardness are very similar. The magnetic permeability is similar at 1.005 [1] and for all practical purposes it is non magnetic.

Summary of the Composition and Vacuum Properties of Stainless Steel Used in UHV

USA AISI	Europe. EN	C max	Cr	Ni	Mo	N	Uses and Properties	Suitability for UHV
304	1.4301	0,08	18	9	-	-	General purpose austenitic stainless steel , relatively low cost	Medium
304L	1.4306	0,03	18	9	-	-	Extra low C prevents carbide precipitation – suitable for general UHV use	Good
304LN	1.4311	0,03	18	9	-	0,18	Improved mechanical properties over 304L	Good
316	1.4401	0,08	16,6	12	2,5	-	General purpose but with higher corrosion resistance.	Very Good
316L	1.4404	0,03	16,6	12	2,5	0,1 (max)	Extra low carbon - good TIG welding properties , highest corrosion resistance especially to chlorides ,magnetic permeability typically less than 1.005	Excellent
316LN	1.4406	0,03	16,6	12	2,5	0,12-0,22	Extra low carbon - good TIG welding properties , highest corrosion resistance especially to chlorides ,magnetic permeability typically less than 1.005, better mechanical properties than 316L	Excellent
321	1.4541	0,08	17,5	9,1	-	-	General Purpose especially for bellows	Good

1 S. Yadev, Fermilab Report, TD-01-065, September 2001, Fermi National Accelerator, PO Box 500, Batavia, Illinois, USA 60510

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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. Components are leak tested for a leak rate less than $5*10^{-10}$ mbar /l s. 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 provided that the gasket material can withstand elevated temperatures. Viton is suitable for 150°C. The maximum differential pressure is 1 bar.

Feedthroughs, some of which contain Kovar (a NiFe alloy which has a good match to the thermal extension of Glass and Ceramic) can be used down to -50°C. At lower temperatures, a phase transition occurs which can damage the feedthrough. Special cryogenic feedthroughs are available, please ask the sales office for details.

Conformance of Allectra Components

Allectra CF UHV Components use the internationally accepted copper gasket flange system. They are compatible with the Varian Conflat and CF or FC types from Vacuum Generators and other manufacturers for sizes up to and including DN200. They conform to the Alternate Series of Flanges described in ISO 3669. For sizes over DN200, no international standard exist. Please ask sales office for advice in this case.

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

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

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

- All prices are in Euros , ex-works Allectra stores in Berlin or Lewes. Prices can be quoted in Pounds Sterling , US Dollars or other currencies. Please call the sales office.
- Prices are for guidance only and are subject to change at any time without notice. Please contact the sales office for a firm quotation.
- The prices do not include VAT.
- Delivery within the European Union is free of charge for shipments of value €1000.00. or over . For orders under that amount ,the standard delivery charge is €20.00. This may be greater in some cases for heavy or bulky items.
- Quantity Discounts are available . Please ask for details
- To open a trading account , please contact the sales office.
- Allectra Products carry a two year warranty. Wear and Tear and Mis-use are excepted.

Copyright and Trade Mark Ownership

- The "allectra flange" is a registered copyright design of Dr Bernhard Luckscheiter.
- "Caburn UHV" is a registered trade mark of Dr Michael Holmes
- "Viton" and "Kapton" are registered trade marks of Du Pont
- "Conflat" is a registered trade mark of Varian Associates..
- The "Atlas Flange" is a registered trade mark of Atlas Technologies Inc.

1.1: Sub-miniature-D Type Feedthroughs

These multi-pin feedthroughs fully comply with the internationally accepted Sub-Miniature D Standard (MIL-C-24308) which is widely specified in electronics. They are recommended for electrical measurements, signals , heaters up to 5 amps as well as thermocouple connections. Internal and external connectors have locking screws which are important for safety and ease of demountability. They are particularly suitable as components for building CE compliant machines.
The plugs and sockets are industry standard types and the feedthroughs can be used with a wide range of connectors from electronic component suppliers.
Allectra offers the complete line of feedthroughs , crimp pins, crimp tools and cables.
Internal vacuum compatible D type plugs are offered in two versions: ceramic for UHV and special Low Vapour Pressure Polymer for High Vacuum.

D9 Way on DN25KF

D15 way on DN40CF flange

- True Sub-miniature D, industry standard type , meets US standard MIL-C-24308
- Versions with 9, 15, 25, 37 and 50 Pins
- 500V, max. 5A per Pin
- UHV bakeable to 250°C, max. temp. Gradient 25K/min
- Compatible with other manufacturers equipment and cables
- Pins protected inside housing
- Plugs for vacuum side – high vacuum or UHV
- D15 and D25 DN40CF, D9 25KF/ D15 40KF available with special vacuum plug
- Weldable versions available to special order

Pins	CF	Sub-D type	Part Number	Euro
9	DN40CF	Sub-D Feedthrough 9 Pin on DN40CF Flange	210-D09-CF040	299.00
15	DN40CF	Sub-D Feedthrough 15 Pin on DN40CF Flange	210-D15-CF040	339.00
15	DN63CF	Sub-D Feedthrough 15 Pin on DN63CF Flange	210-D15-CF063	369.00
25	DN40CF	Sub-D Feedthrough 25 Pin on DN40CF Flange	210-D25-CF040	399.00
25	DN63CF	Sub-D Feedthrough 25 Pin on DN63CF Flange	210-D25-CF063	399.00
2x25	DN63CF	Sub-D Feedthrough 2 x 25 Pin on DN63CF Flange	210-D25-CF063-2	695.00
37	DN63CF	Sub-D Feedthrough 37 Pin on DN63CF Flange	210-D37-CF063	495.00
37	DN100CF	Sub-D Feedthrough 37 Pin on DN100CF Flange	210-D37-CF100	498.00
50	DN63CF	Sub-D Feedthrough 50 Pin on DN63CF Flange	210-D50-CF063	519.00
50	DN100CF	Sub-D Feedthrough 50 Pin on DN100CF Flange	210-D50-CF100	519.00

	KF / ISO-K		Part Number	Euro
9	DN25KF	Sub-D Feedthrough 9 Pin on DN25KF Flange	210-D09-KF25	299.00
9	DN40KF	Sub-D Feedthrough 9 Pin on DN40KF Flange	210-D09-KF40	299.00
15	DN40KF	Sub-D Feedthrough 15 Pin on DN40KF Flange	210-D15-KF40	332.00
15	DN50KF	Sub-D Feedthrough 15 Pin on DN50KF Flange	210-D15-KF50	339.00
25	ISO-K 63	Sub-D Feedthrough 25 Pin on DN63ISO-K Flange	210-D25-ISO063	399.00
37	ISO-K 100	Sub-D Feedthrough 37 Pin on DN100 ISO-K Flange	210-D37-ISO100	498.00
50	ISO-K 100	Sub-D Feedthrough 50 Pin on DN100ISO-K Flange	210-D50-ISO100	519.00

Special Multi-feedthroughs with several D types mounted on one vacuum flange are available to order.

Special Versions with Nickel Plated Pins (no Gold) are available to order.

Please ask for details.

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1.2: Sub-miniature-D Plugs and Sockets / High Vacuum and Air Side

For the Sub-D feedthroughs, Allectra offers industry standard Sockets (Female) and Plugs (Male) in versions for Air use, for High Vacuum and UHV.

- High Vacuum Versions are made from Glass Loaded Polymer with Stainless Steel Housings
- UHV Version in Ceramic. These are also suitable for high temperature use in air. The maximum working temperature is around 300°C (see next page)
- Different crimp pins are available for various applications and wire sizes

These plugs and sockets can be wired with Allectra Vacuum Compatible Cables such as Kapton UHV types.
Feedthroughs accept Sockets (Female type) on both the air and vacuum sides.
In-Vacuum demountable connections can be made by using Sockets together with Plugs.

High Vacuum D Type Socket

- Versions with 9, 15, 25, 37 and 50 Pins
- HV Version bakeable to 110°C
- Pins Gold plated, various types **Please order separately**
- Dimensions correspond to standard Sub-Miniature D (SMALL versions have no fixing holes)
- Plug & Socket can be used independently as in-vacuum demountable connectors

Specification HV-Plug & Socket

Material:	Glass loaded Polymer Stainless Steel housing
Temperature:	- 55°C to 110°C
Vacuum:	10^{-8}mbar
Design:	Push-on pins can be removed with a special tool

Specification Housings

Material:	Zinc, Nickel plated
Temperature:	-55°C... 110°C
Vacuum:	10^{-8} mbar
Design:	2 part, screwed

Air Side Plugs

Type	Solder connection
Housing	
9 / 15 / 25 pin	Black plastic, with long screws
37 / 50 pin	Metallised plastic, standard screws

Pins	Vacuum	Female Sockets for Feedthroughs	Qty.	Part Number	Euro
9	HV	Sub-D Socket, female, High Vacuum Version 110°C, 9 Pins	1	211-FS09-HV	49.00
9	HV	Sub-D Socket, female, High Vacuum Version 110°C, 9 Pins, SMALL	1	211-FS09-HV-S	49.00
15	HV	Sub-D Socket, female, High Vacuum Version 110°C, 15 Pins	1	211-FS15-HV	52.00
15	HV	Sub-D Socket, female, High Vacuum Version 110°C, 15 Pins, SMALL	1	211-FS15-HV-S	52.00
25	HV	Sub-D Socket, female, High Vacuum Version 110°C, 25 Pins	1	211-FS25-HV	60.00
25	HV	Sub-D Socket, female, High Vacuum Version 110°C, 25 Pins, SMALL	1	211-FS25-HV-S	60.00
37	HV	Sub-D Socket, female, High Vacuum Version 110°C, 37 Pins	1	211-FS37-HV	75.00
37	HV	Sub-D Socket, female, High Vacuum Version 110°C, 37 Pins, SMALL	1	211-FS37-HV-S	75.00
50	HV	Sub-D Socket, female, High Vacuum Version 110°C, 50 Pins	1	211-FS50-HV	87.00
50	HV	Sub-D Socket, female, High Vacuum Version 110°C, 50 Pins, SMALL	1	211-FS50-HV-S	87.00

Pins	Vacuum	Male Plugs	Qty.	Part Number	Euro
9	HV	Sub-D Plug, male, High Vacuum, 9 Pins	1	211-MS09-HV	38.00
15	HV	Sub-D Plug, male, High Vacuum, 15 Pins	1	211-MS15-HV	44.00
25	HV	Sub-D Plug, male, High Vacuum, 25 Pins	1	211-MS25-HV	46.00
37	HV	Sub-D Plug, male, High Vacuum, 37 Pins	1	211-MS37-HV	55.00
50	HV	Sub-D Plug, male, High Vacuum, 50 Pins	1	211-MS50-HV	56.00

Pins	Vacuum	Housings	Qty.	Part Number	Euro
9	HV	All Metal Housing, Nickel plated for Sub-D plug (male/female), incl.SS Screws	1	211-HOUSING-D09	15.00
15	HV	All Metal Housing, Nickel plated for Sub-D plug (male/female), incl.SS Screws	1	211-HOUSING-D15	18.00
25	HV	All Metal Housing, Nickel plated for Sub-D plug (male/female), incl.SS Screws	1	211-HOUSING-D25	21.00

Pins		Housings	Qty.	Part Number	Euro
9	AIR	Sub D Plug, air side, female, 9-pin	1	211-FS09-AIR	8.00
15	AIR	Sub D Plug, air side, female, 15-pin	1	211-FS15-AIR	9.00
25	AIR	Sub D Plug, air side, female, 25-pin	1	211-FS25-AIR	10.00
37	AIR	Sub D Plug, air side, female, 37-pin	1	211-FS37-AIR	14.00
50	AIR	Sub D Plug, air side, female, 50-pin	1	211-FS50-AIR	15.00

1.3: Sub-D Plugs for UHV

UHV D Type Socket

All UHV plugs are manufactured from Glass Ceramic, the reasons for this are:.

- Porous free material, neither water nor gas absorption
- Material free of carbon hydrates
- High bakeability of 300°C including pins (Glass Ceramic can be used in UHV up to 700°C continuously). Can be used for cryogenic applications

Pins	HV / UHV	Sockets, female (for Feedthrough)	Qty	Part Number	Euro
9	UHV	Sub-D Socket, female, UHV Version Glas ceramic, 9 Pins	1	211-FS09-UHV	165.00
15	UHV	Sub-D Socket, female, UHV Version Glas ceramic, 15 Pins	1	211-FS15-UHV	193.00
25	UHV	Sub-D Socket, female, UHV Version Glas ceramic, 25 Pins	1	211-FS25-UHV	204.00
37	UHV	Sub-D Socket, female, UHV Version Glas ceramic, 37 Pins	1	211-FS37-UHV	235.00
50	UHV	Sub-D Socket, female, UHV Version Glas ceramic, 50 Pins	1	211-FS50-UHV	244.00

Specification UHV-Plugs

Material	Glass ceramic, porous free
Temperature	4K ... 300°C (Incl. Pins)
Vacuum	10^{-11} mbar
Design	two parts, screwed

Please order pins separately

Pins	HV / UHV	Plugs, male	Qty	Part Number	Euro
9	UHV	Sub-D Plug, male, UHV Version Glas ceramic, 9 Pins	1	211-MS09-UHV	165.00
15	UHV	Sub-D Plug, male, UHV Version Glas ceramic, 15 Pins	1	211-MS15-UHV	193.00
25	UHV	Sub-D Plug, male, UHV Version Glas ceramic, 25 Pins	1	211-MS25-UHV	204.00
37	UHV	Sub-D Plug, male, UHV Version Glas ceramic, 37 Pins	1	211-MS37-UHV	POA
50	UHV	Sub-D Plug, male, UHV Version Glas ceramic, 50 Pins	1	211-MS50-UHV	POA

Crimp Pins for HV and UHV

In addition to the Standard Crimp Pins which are suitable in most cases , Allectra offers special pins for other applications (see Table below).

Pins	***WireØ***	***Crimp Tool***	***Application***
Standard	0.25 – 1 mm	214-CTOOL / 214-CTOOL-HQ	With Stainless Steel outer, high quality, our standard pin
"B" (Budget)	0.25 – 1mm	214-CTOOL / 214-CTOOL-HQ	Without SS outer, cheaper, for applications,,which are infrequently used
"S" (Small)	0.08 – 0.5mm	214-CTOOL-HQ	Like Standard, but for thin wires, "HQ"- Crimptool required
"NI" (nickel pl.)	0.25 – 1mm	214-CTOOL / 214-CTOOL-HQ	Like "B", but Nickel plated, special for semiconductor applications
Thermocouple	0,25 – 0.6mm	214-CTOOL-TC	Type K Thermocouple Pins, Cromel and Alumel material

Pins (HV and UHV)

Material	Cu-Alloy, Gold plated
"Ni" Version	Nickel plated
Pins Standard:	with Stainless Steel outer, (female)
Pins Budget	without Stainless Steel outer
Assembly	Crimp Pins for wires from 0.25 to 1mm diameter Small Version for wires from 0.08 – 0.5mm Ø

Type	Pins	Qty	Part Number	Euro
Std	Crimps for Sub-D Sockets, female, for UHV and HV, 10 off	10	212-PINF-10	12.00
Std	Crimps for Sub-D Sockets, female, for UHV and HV, 25 off	25	212-PINF-25	23.00
"B"	Crimps for Sub-D Sockets, female, "Budget", 10 off	10	212-PINF-10-B	9.00
"B"	Crimps for Sub-D Sockets, female, "Budget", 25 off	25	212-PINF-25-B	18.00
"S"	Crimps for Sub-D Sockets, female,"Small", 10 off	10	212-PINF-10-S	13.00
"S"	Crimps for Sub-D Sockets, female,"Small", 25 off	25	212-PINF-25-S	25.00
"Ni"	Crimps for Sub-D Sockets, female,Ni plated, 10 of	10	212-PINF-10-NI	20.00
Std	Crimps for Sub-D Plugs, male, UHV and HV, 10 off	10	212-PINM-10	7.00
Std	Crimps for Sub-D Plugs, male, UHV and HV, 25 off	25	212-PINM-25	14.00

Thermocouple Crimps see next page

1.4: Thermocouple Pins and Accessories for Sub-D

Sub-D feedthroughs can also be used as thermocouple feedthroughs. In this case, instead of the standard crimp pins , thermocouple versions are used on the air side and the vacuum side. As the short pins of the feedthrough itself have no temperature gradient along their length , they do not introduce an error into temperature measurement . Standard Sub-D feedthroughs may be used in this way for all "normal" temperature measurements . For very precise measurement, we recommend the use of a Platinum resistance thermometer.

Additional accessories such as adapters and tools are also listed.

Thermocouple Pins

Instead of normal crimp pins , Type K thermocouple pins can be used with Sub-D feedthroughs if K type thermocouples are to be connected to the sub-D . This method which avoids the need for a separate thermocouple feedthrough is satisfactory except for very high accuracy applications.

Type	Vacuum	Thermocouple Pins	Qty.	Part Number	Euro
K	HV + UHV	Thermocouple Crimps for Sub-D Socket, female, K-Type, 5x Cromel / 5x Alumel	5+5	213-PINF-K	39.00
K	HV + UHV	Plug, male, K-Type, 5x Cromel / 5x Alumel	5+5	213-PINM-K	39.00

Crimping Tool

For the secure connection of the cables to the crimp pins a special crimp tool is necessary.

214-CTOOL

214-CTOOL-HQ
4-pin crimp tool
with positioner

	Vacuum	Tools	Qty.	Part Number	Euro
	HV	Tool for mounting and demounting Crimp Pins in the HV Socket	1	214-CRIMPINS	25.00
	HV + UHV	Crimp Tool for HV and UHV Sub-D Crimp Pins, with position locator	1	214-CTOOL-HQ	423.00
	HV + UHV	Crimp Tool for HV and UHV Sub-D Crimp Pins, without position locator	1	214-CTOOL	198.00
	HV + UHV	Crimp Tool for Thermocouple Pins	1	214-CTOOL-TC	24.00

As Thermocouple Pins have an open shape , the above crimp tool cannot be used. In this case a satisfactory crimp can be made with a standard pair of pliers.

The crimp pins will snap into the HV housings. If a pin must be removed, the tool CPIMPINS is required. This tool can also be used for insertion of the crimps.

Adapter (see picture on top)

Adapters compensate for the fact that the Sub-D Feedthrough is of female configuration both on the air and vacuum sides. Use of the adapter on the air side gives normal cable continuity between air and vacuum.

		Adapters	Qty.	Part Number	Euro
		Sub-D Adapter, female to female, for Air Side, 9-Pin	1	211-D9-ADAPT	7.00
		Sub-D Adapter, female to female, for Air Side, 15-Pin	1	211-D15-ADAPT	9.00
		Sub-D Adapter, female to female, for Air Side, 25-Pin	1	211-D25-ADAPT	10.00
		Sub-D Adapter, female to female, for Air Side, 37-Pin	1	211-D37-ADAPT	13.00

Wire Stripper

For Kapton Wire Strippers see Section 300

1.5: Sub-miniature D Feedthrough Complete Kits

Allectra is pleased to offer Sub-miniature D Feedthroughs with their crimp pins and cables as a complete solution for connection from within the vacuum system to the outside world.

Special Introductory Offer Prices apply to these combinations which include the feedthroughs, crimp pins and vacuum compatible cables.

UHV	ULTRA HIGH VACUUM	Part Code	List Price	Euro
D-9 40CF	9-Pin Sub-D Feedthrough DN40CF with UHV-Socket and Crimp-Pins	217-D09-CF40-PACK1	~~476.00~~	420.00
D-15 40CF	15-Pin Sub-D Feedthrough **DN40CF** with UHV-Socket and Crimp-Pins	217-D15-CF40-PACK1	~~555.00~~	499.00
D-15 63CF	15-Pin Sub-D Feedthrough DN63CF with UHV-Socket and 25 Crimp-Pins	217-D15-CF63-PACK1	~~585.00~~	520.00
D-25 40CF	25-Pin Sub-D Feedthrough **DN40CF** with UHV-Socket and 25 Crimp-Pins	217-D25-CF40-PACK1	~~667.00~~	598.00
D-25 63CF	25-Pin Sub-D Feedthrough DN63CF with UHV-Socket and 25 Crimp-Pins	217-D25-CF63-PACK1	~~626.00~~	558.00
D-37 UHV	37-Pin Sub-D Feedthrough DN100CF with UHV-Socket and 50 Crimp-Pins	217-D37-CF100-PACK1	~~779.00~~	698.00
D50 63CF	50-Pin Sub-D Feedthrough **DN63CF** with UHV-Socket and 50 Crimp-Pins	217-D50-CF63-PACK1	~~809.00~~	728.00
D-50 100CF	50-Pin Sub-D Feedthrough DN100CF with UHV-Socket and 50 Crimp-Pins	217-D50-CF100-PACK1	~~809.00~~	728.00

PACK 1 UHV contains:
- Feedthrough on Flange CF
- Vacuumside Socket UHV (glass ceramic)
- Crimp Pins, standard version

PACK 1 HV contains:

- Feedthrough on Flange (KF or ISO-K)
- Vacuumside Socket HV
- Crimp Pins, standard version

Gray marked versions will be delivered with fitting SMALL Plugs

HV	HIGH VACUUM	Part Number	List price	Euro
D-9 25KF	9-Pin Sub-D Feedthrough DN25KF with HV-Socket (small) and 10 Crimp-Pins	217-D09-KF25-PACK1	~~347.00~~	312.00
D-9 40KF	9-Pin Sub-D Feedthrough DN40KF with HV-Socket and 10 Crimp-Pins	217-D09-KF40-PACK1	~~360.00~~	319.00
D-15 40KF	15-Pin Sub-D Feedthrough DN40KF with HV-Socket (small) and 25 Crimp-Pins	217-D15-KF40-PACK1	~~407.00~~	365.00
D-15 HV	15-Pin Sub-D Feedthrough DN50KF with HV-Socket and 25 Crimp-Pins	217-D15-KF50-PACK1	~~414.00~~	368.00
D-25 HV	25-Pin Sub-D Feedthrough ISO-K63 Flange, with HV-Socket and 25 Crimp-Pins	217-D25-ISO63-PACK1	~~482.00~~	435.00
D-37 HV	37-Pin Sub-D Feedthrough ISO-K100 Flange, with HV-Socket and 50 Crimp-Pins	217-D37-ISO100-PACK	~~649.00~~	569.00
D-50 HV	50-Pin Sub-D Feedthrough ISO-K100 Flange, with HV-Socket and 50 Crimp-Pins	217-D50-ISO100-PACK	~~652.00~~	598.00

1.6: Coaxial Feedthroughs

Co-axial feedthroughs are the first choice for measurement signals. If high frequencies or fast pulses are involved , Allectra recommends the use of 50 Ω Types.

Co-axial Feedthrough Types - Comparison

	BNC	***BNC50***	***MHV***	***MHV50***	***SHV***	***SHV50***	***SMA50***	***N50***
Type	BNC Standard	50 Ohm BNC	Similar to BNC but higher voltage	50 Ohm MHV	„SAFE HIGH VOLTAGE"	50 Ohm SHV	50 Ohm SMA	Type N for RF Applications
Voltage V	500	1000	5000	5000	5000	6000	1000	3000
Current A	3	3	3	3	5	3	3	5
Frequency MHz	-	100 *)	-	100	-	100	6500	200
Impedance Ω	-	50	-	50	-	50	50	50
Typical Application	General Purpose	Application needs true 50 Ohm	Higher Voltage than BNC	Higher Voltage – application needs true 50 Ohm	High Voltage safe design	High Voltage safe design- application needs true 50 Ohm	High Frequency Signals- vacuum sockets	RF

*): Double sided BNC can go up to 4 GHz!

BNC (Single Sided / Double Sided / Floating Shield / Double Sided Floating Shield)

Floating Shield BNC

Specification

Vacuum:	UHV
Temp.:	300°C
Voltage:	500V *)
Current:	3A
Impedance Standard Type:	Not constant
50 Series:	50 Ω
Frequency (50 Ω type):	to 100MHz single sided, 4GHz double sided
Pin Diameter:.	2.4mm
Pin Length:	9mm 13mm (50 Ohm)

*) Voltage limited by Socket

Size	BNC	Ohms	Qty.	Part Number	Euro
Weld	BNC Feedthrough for welding		1	241-BNC	45.00
DN16CF	BNC Feedthrough on DN16CF		1	241-BNC-CF16	134.00
DN40CF	BNC Feedthrough on DN40CF		1	241-BNC-CF40	139.00
DN40CF	BNC Feedthrough, 2 Pins, on DN40CF		1	241-BNC-CF40-2	190.00
DN40CF	BNC Feedthrough, 3 Pins, on DN40CF		1	241-BNC-CF40-3	268.00
DN40CF	BNC Feedthrough, 4 Pins, on DN40CF		1	241-BNC-CF40-4	347.00
Weld	BNC Feedthrough for welding, 50 Ohm, max. 100MHz	50 Ω	1	241-BNC50	115.00
DN16CF	BNC Feedthroughon DN16CF, 50 Ohm, max. 100MHz	50 Ω	1	241-BNC50-CF16	160.00
DN40CF	BNC Feedthrough, 2 Pins, on DN40CF, 50 Ohm, max. 100MHz	50 Ω	1	241-BNC50-CF40-2	301.00
Weld	BNC Feedthrough Floating Shield, for welding, 50 Ohm, max. 100MHz	50 Ω	1	241-BNCF50	195.00
DN16CF	BNC Feedthrough Floating Shield, DN16CF, 50 Ohm, max. 100MHz	50 Ω	1	241-BNCF50-CF16	222.00
Weld	BNC Feedthrough Floating Shield, for welding, 50 Ohm, max. 4 GHz, double sided type, 16.5mm Diameter	50 Ω	1	241-BNCDF50	291.00
DN16CF	BNC Feedthrough Floating Shield, DN16CF, 50 Ohm, max. 4 GHz, double sided Type	50 Ω	1	241-BNCDF50-C16	368.00
DN40CF	DN40CF mit 2x BNC Feedthrough Floating Shield, 50 Ohm, max. 4 GHz, double sided Type	50 Ω	1	241-BNCDF50-C40-2	374.00
DN40KF	DN40KF mit 2x BNC Feedthrough Floating Shield, 50 Ohm, max. 4 GHz, double sided Type	50 Ω	1	241-BNCDF50-K40-2	650.00

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1.7: MHV / SHV / Type-N Feedthrough

MHV is a variation of the BNC type. MHV is rated for higher voltage use and can withstand 5kV.
SHV ("Safe High Voltage") is a high voltage co-axial feedthrough especially designed to protect against exposed high voltages.
Type-N is used typically for RF and is particularly suitable for high power use.

Specification MHV

Vacuum: UHV
Temperature: 300°C
Voltage: 5000V / 6000V
Current: 3A
Impedance: Non Constant or. 50 Ω optionally.

Specification SHV

Vacuum: UHV
Temperature: 300°C
Voltage: 5000V
Current: 5A
Impedance: Non constant

Specification SHV 50

Vacuum: UHV
Temperature: 300°C
Voltage: 6000V
Current: 3A
Impedance: 50 Ohm to 100 MHz

Specification Type-N

Vacuum: UHV
Temperature: 300°C
Voltage: 3000V
Current: 5A
Impedance: 50 Ohm, to 200MHz
Double Sided to 6,5GHz

Specification SHV 20KV

Vacuum: UHV
Temperature: 300°C
Voltage: 20,000 V
Current: 15 amps
Length in Vacuum: 34mm
Pin Diameter: 2.3mm

Size	MHV	Ohms	Qty.	Part Number	Euro
DN16	MHV Feedthrough weldable type, 5KV 3A		1	241-MHV	45.00
DN16CF	MHV Feedthrough on DN16CF, 5KV, 3A		1	241-MHV-CF16	134.00
DN16	MHV Feedthrough weldable type, 50 Ohm, max. 100MHz, 6KV, 3A	50	1	241-MHV50	POA
DN16CF	MHV Feedthrough on DN16CF, 50 Ohm, max. 100MHz, 6KV, 3A	50	1	241-MHV50-CF16	POA

Size	SHV 5KV	Ohms	Qty.	Part Number	Euro
DN16	SHV Feedthrough weldable type, 5KV 5A		1	241-SHV	84.00
DN16CF	DN16CF SHV Feedthrough Grounded Shield, 6 KV 5A		1	241-SHV-C16	176.00
DN40CF	DN40CF SHV Feedthrough Grounded Shield, 6 KV 5A		1	241-SHV-C40	180.00

Size	SHV 50 Ohm	Ohms	Qty.	Part Number	Euro
DN16	SHV Feedthrough Grounded Shield, weldable type, 6 KV 50 Ohm, max. 100MHz	50	1	241-SHV50	POA
DN16CF	DN16CF SHV Feedthrough Grounded Shield, 6 KV 50 Ohm, max. 100MHz	50	1	241-SHV50-C16	POA

Size	Type-N	Ohms	Qty.	Part Number	Euro
DN16	Type-N Feedthrough weldable type, 50 Ohm, max. 200MHz, 3KV, 5A	50	1	242-N50	157.00
DN16CF	Type-N Feedthrough on DN16CF, 50 Ohm, max. 200MHz, 3KV, 5A	50	1	242-N50-CF16	220.00
DN40CF	Type-N Feedthrough on DN40CF, 50 Ohm, max. 200MHz, 3KV, 5A	50	1	242-N50-CF40	225.00
DN16	Type-N Feedthrough weldable type, Floating Shield double ended, 50 Ohm, max. 6.5GHz, 3KV, 5A	50	1	242-NDF50	POA
DN40CF	Type-N Feedthrough on DN40CF, Floating Shield double ended, 50 Ohm, max. 6.5GHz, 3KV, 5A	50	1	242-NDF50-CF40	POA

Size	SHV High Voltage 20KV	Ohms	Qty.	Part Number	Euro
weld	20KV SHV Type , 5Amp , weldable		1	242-N50	274.00
DN16CF	20KV SHV Type , 5Amp , DN16CF		1	242-N50-CF16	367.00

Power Sockets for SHV Feedthroughs now available . Please call sales office.

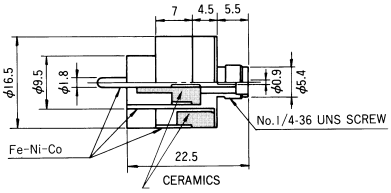
1.9: SMA Feedthrough

The compact SMA Feedthrough provides an exceptionally useful addition to the range of vacuum components.
The SMA type is true 50 Ohm, is double sided with 50 Ohm rated air and vacuum side sockets and is compatible with 50 Ohm Kapton Cable for UHV or high vacuum use. The SMA provides the best solution for high frequency vacuum to air connectivity with its convenient size and range of compatible connectors and cables.
Vacuum sockets are available with a choice of PTFE (Teflon) for high vacuum and ceramic isolation for UHV.
The PTFE version is recommended for best high frequency performance.
When the system earth must be separated from the cable shield, Floating Shield Versions are available on DN16CF flanges.

SMA

Specification	
Vacuum:	UHV
Temp.(F/T):	300°C
Voltage:	1000V
Current:	3A
Impedance:	50 Ohm
Frequency:	to 6,5GHz

Size	SMA Feedthrough	Ohms	Qty.	Part Number	Euro
-	SMA Feedthrough Weldable Type, 50 Ohm, max. 6.5GHz, 1000V 3A	50 Ω	1	242-SMA50	221.00
DN16CF	SMA Feedthrough on DN16CF, 50 Ohm, max. 6.5GHz, 1000V 3A	50 Ω	1	242-SMA50-C16	286.00
-	SMA Feedthrough, double sided, Weldable Type, 50 Ohm, max. 6.5GHz, 1000V 3A	50 Ω	1	242-SMAD50	297.00
DN16CF	SMA Feedthrough, double sided, on DN16CF, 50 Ohm, max. 6.5GHz, 1000V 3A	50 Ω	1	242-SMAD50-C16	378.00
-	SMA Feedthrough, double sided, Floating Shield, Weldable Type, 50 Ohm, max. 6.5GHz, 1000V 3A	50 Ω	1	242-SMADF50	365.00
DN16CF	SMA Feedthrough, double sided, Floating Shield, on DN16CF, 50 Ohm, max. 6.5GHz, 1000V 3A	50 Ω	1	242-SMADF50-C16	440.00



Dim. of weldable version

Vacuum female plug

Fits to 50 Ohm Cable:
311-KAP50

	Connectors	Ohms	Qty.	Part Number	Euro
Vacuum	SMA Socket, Gold plated Stainless Steel Housing, Pin Cu-conductor gold plated for Vacuum Side	50 Ω	1	245-CON-SMA	42.00
Vacuum	SMA Socket, Gold plated Stainless Steel Housing, Pin Cu-conductor gold plated for Vacuum Side with Ceramic Isolator		1	245-CON-SMA-CER	69.00
Vacuum	SMA Plug, Gold plated Stainless Steel Housing, gold plated for Vacuum Side	50 Ω	1	245-CON-SMA-FEMALE	51.00
Vacuum	SMA T-Piece, 3x female, gold plated Nickel includes PTFE	50 Ω	1	245-CON-SMA-T-FFF	25.00
Air	SMA Socket, for Airside, for Cable RG174	50 Ω	1	245-CON-SMA-AIR	10.00
Air	Adapter BNC Plug on SMA Socket (Connects BNC Cable to SMA Feedthrough)		1	245-ADAPT-BNC-SMA	15.00
Air	BNC Socket, for Airside, for Cable RG58	50 Ω	1	245-CON-BNC-AIR	10.00

	Cables, ready made	Ohms	Qty.	Part Number	Euro
Vacuum	SMA Cable 1m, 50 Ohm coaxial, SMA Socket – open end	50 Ω	1	246-SMA-CAB-FX1000	POA
Vacuum	SMA Cable 1m, 50 Ohm coaxial, SMA Socket – SMA Socket	50 Ω	1	246-SMA-CAB-FF1000	POA
Vacuum	SMA Cable 1m, 50 Ohm coaxial, SMA Socket – SMA Plug	50 Ω	1	246-SMA-CAB-FM1000	POA

A separate Data Sheet is available on request for the SMA Feedthrough and Socket.

1.10: Power Feedthroughs 500V, 10Amps Unflanged , CF and KF

A wide variety of power feedthroughs are available including types with Voltage Ratings from 500V to 30.000V for currents from a few milliamps to 600A. In the following pages the types are sorted by their Voltage Rating.

These 500V versions are especially useful because of their small size. The standard type has a Molybdenum Conductor which can carry currents as high as 10 A if required.

Specification	
Pin-Material:	Molybdenum
Weld adaptor:	Stainless Steel
Voltage:	500V

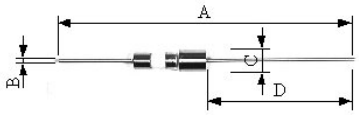
These feedthroughs can also be supplied with conductors in the following materials:

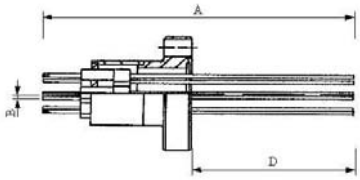
- Stainless Steel
- Copper
- Nickel
- Constantan

Pins	WELDABLE-VERSION	A	B	C	D	Part Number	Euro
1	Weldable Feedthrough 500V 10A, Mo-Pin 0.8mm	53	0.8	3.9	25	261-010MO500	32.00

Pins	DN16CF VERSION	A	B	C	D	Part Number	Euro
1	Feedthrough 500V 10A, Mo-Pin 0.8mm, DN16CF Flange	53	0.8	-	25	261-010MO500-CF16	105.00
2	Feedthrough 500V 10A, Mo-Pin 0.8mm, 2 Pins, DN16CF Flange	64	0.8	-	39	261-010MO500-CF16-2	153.00
4	Feedthrough 500V 10A, Mo-Pin 0.8mm, 4 Pins, DN16CF Flange	64	0.8	-	39	261-010MO500-CF16-4	167.00
8	Feedthrough 500V 10A, Mo-Pin 0.8mm, 8 Pins, DN16CF Flange	64	0.8	-	39	261-010MO500-CF16-8	203.00

Pins	DN16KF VERSION	A	B	C	D	Part Number	Euro
1	Feedthrough 500V 10A, Mo-Pin 0.8mm, DN16KF Flange	53	0.8	-	37	261-010MO500-KF16	97.00
2	Feedthrough 500V 10A, Mo-Pin 0.8mm, 2 Pins, DN16KF Flange	64	0.8	-	37	261-010MO500-KF16-2	153.00
4	Feedthrough 500V 10A, Mo-Pin 0.8mm, 4 Pins, DN16KF Flange	64	0.8	-	37	261-010MO500-KF16-4	167.00
8	Feedthrough 500V 10A, Mo-Pin 0.8mm, 8 Pins, DN16KF Flange	64	0.8	-	37	261-010MO500-KF16-8	203.00





N.B.: Molybdenum is hard and brittle. Shortening or bending the Conductor is possible but requires great care.

Sockets: The Sub-D Type Crimp Pins can be directly crimped onto the conductors of some power feedthroughs. This provides a simple and straightforward method of making connections to the power conductors in the vacuum. The same method can be used on the air side. (See Section 210).
If required, we can suggest suitable combinations of Feedthroughs and Connectors. Please call the sales office.

Coaxial-Type (BNC etc.) are found in Section 240.

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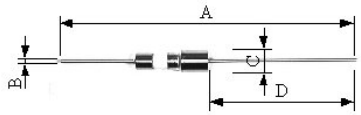
1.10: Power Feedthroughs 1 KV to 3KV, 15 Amps to 250 Amps

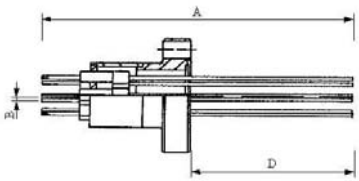
The best value for money feedthroughs are the versions with 1KV Voltage Rating.

The 3KV Versions offer Types for 15 / 30 / 250 /600 A.
(Other High Current Types can be found in the 5KV section)

Specification	
Pin-Material:	Copper is Standard, Nickel and Stainless Steel Optional
Weld Adapter:	Stainless Steel
Voltage:	1KV / 3KV DC
Current:	15 A - 600A



Single Conductor Weldable Version



Multi- Conductor Version with Flange

- All Versions can also be supplied with KF Flanges -

Other Conductors , Stainless Steel, Nickel or Kovar , Please call sales office

	Feedthrough 1KV, 15 Amps	A	B	C	D	Part Number	Euro
weld	Weldable Feedthrough 1KV 15A, Cu-Pin 1.3mm	83	1.3	6.3	57	261-015CU1K	25.00
16CF	DN16CF Feedthrough, 1 Pin, 1KV 15A, Cu-Pin 1.3mm	83	1.3	-	56	261-015CU1K-C16	96.00
16CF	DN16CF Feedthrough, 4 Pins, 1KV 15A, Cu-Pin 1.3mm	101	1.3	-	35	261-015CU1K-C16-4	145.00
40CF	DN40CF Feedthrough, 1 Pin, 1KV 15A, Cu-Pin 1.3mm	83	1.3	-	56	261-015CU1K-C40	98.00
40CF	DN40CF Feedthrough, 2 Pins, 1KV 15A, Cu-Pin 1.3mm	83	1.3	-	56	261-015CU1K-C40-2	168.00

	Feedthrough 3KV, 15 Amps	A	B	C	D	Part Number	Euro
weld	Weldable Feedthrough 3KV 15A, Cu-Pin 1.3mm	102	1.3	7.8	52	261-015CU3K	28.00
weld	Weldable Feedthrough 3KV 15A, Nickel Pin 1.3mm	102	1.3	7.8	52	262-015NI3K	28.00
weld	Weldable Feedthrough 3KV 15A, Stainless Steel-Pin 1.3mm	102	1.3	7.8	52	263-015SS3K	28.00
16CF	DN16CF Feedthrough 3KV 15A, Copper Pin 1.3mm	102	1.3	-	51	261-0153K-C16	98.00
16CF	DN16CF Feedthrough 3KV 15A, 2 x Copper-Pins 1.3mm	102	1.3	-	51	261-015CU3K-2-C16	152.00
16CF	DN16CF Feedthrough 3KV 15A, 4 x Copper Pins 1.3mm	102	1.3	-	51	261-015CU3K-4-C16	165.00
40CF	DN40CF Feedthrough 3KV 15A, Cu-Pin 1.3mm	102	1.3	-	51	261-015CU3K-C40	101.00
40CF	DN40CF Feedthrough 2 Pins, 3KV 15A, Copper 1.3mm	102	1.3	-	51	261-015CU3K-C40-2	180.00

	Feedthrough 3KV, 30 Amps	A	B	C	D	Part Number	Euro
weld	Weldable Feedthrough, 3KV 30A, Cu-Pin 2mm,	52	2	7	12	261-030CU3K	43.00
16CF	DN16CF Feedthrough, 3KV 30A, Cu-Pin 2mm	52	2	-	12	261-030CU3K-CF16	103.00

	Feedthrough 3KV, 250 Amps	A	B	C	D	Part Number	Euro
weld	Weldable Feedthrough 3KV 250A, Cu-Pin 9,6mm	1 84	9.6	19	104	261-250CU3K	85.00
16CF	DN16CF Feedthrough 3KV 250A, Cu-Pin 9,6mm	184	9.6	-	104	261-250CU3K-C16	161.00

	Feedthrough 3KV, 600 Amps	A	B	C	D	Part Number	Euro
weld	Weldable Feedthrough 3KV 600A, Cu-Pin 19mm	184	19	28.5	86	261-600CU3K	191.00
40CF	DN40CF Feedthrough 3KV 600A, Cu-Pin 19mm	184	19	-	86	261-600CU3K-C40	257.00

Socket: For the Conductor Diameter 1,3mm use Socket 360-PPO-1.3 . Up to a maximum diameter of 6.6mm the Push On Connectors 360-PIC-xx can be used.

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1.11: Power Feedthroughs 5KV to 30KV, 30 to 150 Amps, Unflanged , CF and KF

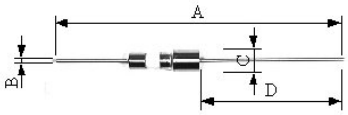
Feedthroughs for 5KV are offered with pins of 2,4mm diameter for 30 A up to 6,35mm for 150A.

Specification	
Pin-Material	Copper, Nickel and SS on request
Weld-Adapter	Stainless Steel
Voltage	5KV – 30KV DC
Current with copper conductor:	
2,4mm	30A
4mm	75A
6,53mm	150A

	Feedtrough 5KV, 30 Amps	A	B	C	D	Part Number	Euro
weld	Feedthrough, 5KV 30A, Cu-Pin 2,4mm	184	2.4	11	127	261-030CU5K	36.00
16CF	Feedthrough, 5KV 30A, Cu-Pin 2,4mm	184	2.4	-	126	261-030CU5K-C16	115.00
16CF	Feedthrough, 5KV 30A, Cu-Pin 2,4mm, 2 Pins		2.4			261-030CU5K-2-C16	199.00
16CF	Feedthrough, 5KV 30A, Cu-Pin 2,4mm, 4 Pins		2.4			261-030CU5K-4-C16	287.00
16CF	Feedthrough, 5KV 30A, Cu-Pin 2,4mm, 8 Pins		2.4			261-030CU5K-8-C16	446.00

	Feedtrough 5KV, 75 Amps	A	B	C	D	Part Number	Euro
weld	Feedthrough, 5KV 75A, Cu-Pin 4mm	58	4	10.8	12	261-075CU5K	56.00
16CF	Feedthrough, 5KV 75A, Cu-Pin 4mm	58	4	-	12	261-075CU5K-C16	115.00
40CF	Feedthrough, 5KV 75A, Cu-Pin 4mm,	58	4		12	261-075CU5K-C40	119.00
40CF	Feedthrough 5KV, 75A, Cu-Pin, 4mm ,2 Pins	58	4		12	261-075CU5K-C40-2	220.00
40CF	Feedthrough, 5KV 75A, Cu-Pin 4mm, 4 Pins	58	4		12	261-075CU5K-C40-4	422.00

	Feedthrough 5KV, 150 Amps	A	B	C	D	Part Number	Euro
weld	Weldable Feedthrough 5KV 150A, Cu-Pin 6.35mm	184	6.35	15.8	105	261-150CU5K	65.00
16CF	Weldable Feedthrough 5KV 150A, Cu-Pin 6.35mm	184	6.35	-		261-030CU10K-C16	110.00
40CF	Weldable Feedthrough 5KV 150A, Cu-Pin 6.35mm	184	6.35	-	104	261-030CU10K-C40	110.00
40CF	Weldable Feedthrough 5KV 150A, Cu-Pin 6.35mm, 2 Pins	184	6.35		104	261-150CU5K-C40-2	232.00



Push On Sockets for 2.4, 4.0, and 6.25mm pins are found in section 1.17

	Feedthrough 10KV , 30 Amps	A	B	C	D	Part Number	Euro
weld	Weldable Feedthrough 10KV, 30A, Cu-Pin 2.4mm	184	2.4	11	117	261-030CU10K	48.00
16CF	DN16CF Feedthrough 10KV, 30A, Cu-Pin 2.4mm	184	2.4	-	116	261-030CU10K-C16	111.50
40CF	DN40CF Feedthrough 10KV, 30A, Cu-Pin 2.4mm	224	2.3	-	142	261-030CU10K-C40	114.00

	Feedthrough 20KV High Voltage	A	B	C	D	Part Number	Euro
weld	Weldable Feedthrough 20KV, 15Amps, Nickel Pin 2.4mm with thread on air side	224	2.3	18.9	143	261-015NI20K	117.00
16CF	DN16CF Feedthrough 20KV, 15Amps, Nickel Pin 2.4mm with thread on air side	226	2.4	-	121	261-015NI20K-C16	163.00
40CF	DN40CF Feedthrough 20KV, 15Amps, Nickel Pin 2.4mm with thread on air side, 2 Pins	226	2.4	-	121	261-015NI20K-C40	322.00

	Feedthrough 30KV , High Voltage	A	B	C	D	Part Number	Euro
weld	Weldable Feedthrough 30KV, 1Amps, Stainless Steel Pin 2.4mm with thread on air side	226	2.4	38.1	122	261-001SS30K	229.00
40CF	DN40CF Feedthrough 30KV, 1Amps, Stainless Steel Pin 2.4mm with thread on air side	226	2.4	-	121	262-001SS30K	312.00

All Feedthroughs can be delivered on KF or other vacuum flanges

Please call sales office

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1.12: Multi-Pin Feedthroughs 700V , 10Amps with Sockets

When a secure connection on the air side is required, Multi-Pin Circular Feedthroughs with Screw - On Sockets are a good choice.
All the feedthroughs in this section are delivered with the air side socket.
Double sided feedthroughs have additionally a vacuum compatible socket on the vacuum side. In this case both sockets are included with the delivery.

Specification -Standard Types

Voltage:	700V (limited by the socket, the feedthrough is rated to 2KV)
Current:	10A / Pin max.
Temp.:	450°C (Air Side Socket: 125°C)
Pin-Material:	Alumel
Pin Diameter:	1,4mm

Specification -Double Sided Types

Voltage:	700V
Current:	10A / Pin max.
Temp.:	400°C, (including Vacuum-Socket)
(Air-side Socket:	125°C)
Pin-Material:	Alumel
Pin Diameter:	1,4mm

Maximum Total Current Shared by all Pins

4 Pins	28A
6 Pins	36A
10 Pins	50A
20 Pins	75A
35 Pins	100A

Spare Sockets available on request.

All Types can be supplied on KF / ISO-K (LF) Flanges to order

Pins	WELDABLE VERSIONS	A	B	D *	Part Number	Euro
4	Electrical Feedthrough, 4 Pins 10A 700V, Weldable Version with Socket	61	79	19	221-10AL700-4	260.00
6	Electrical Feedthrough, 6 Pins 10A 700V, Weldable Version with Socket	61	79	19	221-10AL700-6	283.00
10	Electrical Feedthrough, 10 Pins 10A 700V, Weldable Version with Socket	61	79	19	221-10AL700-10	470.00
20	Electrical Feedthrough, 20 Pins 10A 700V, Weldable Version with Socket	64	88	35	221-10AL700-20	561.00
35	Electrical Feedthrough, 35 Pins 10A 700V, Weldable Version with Socket	101	53	38.1	221-10AL700-35	1070.00
	CF Version	A	B	C	Part Number	Euro
4	Electrical Feedthrough, 4 Pins 10A 700V on DN16CF with Socket	74	67	9.7	221-10AL700-4-CF16	292.00
6	Electrical Feedthrough, 6 Pins 10A 700V on DN16CF with Socket	74	67	11	221-10AL700-6-CF16	318.00
6	Electrical Feedthrough, 6 Pins 10A 700V on DN40CF with Socket	63	78	11	221-10AL700-6-CF40	336.00
10	Electrical Feedthrough, 10 Pins 10A 700V on DN16CF with Socket	74	67	13	221-10AL700-10-CF16	504.00
10	Electrical Feedthrough, 10 Pins 10A 700V on DN40CF with Socket	63	78	13	221-10AL700-10-CF40	510.00
20	Electrical Feedthrough, 20 Pins 10A 700V on DN40CF with Socket	85.5	87	26	221-10AL700-20-CF40	637.00
35	Electrical Feedthrough, 35 Pins 10A 700V, on DN40CF with Socket	102	52	31	221-10AL700-35-C40	1125.00
	KF Version	A	B	C	Part Number	Euro
4	Electrical Feedthrough, 4 Pins 10A 700V on DN16KF with Socket	74	67	9.7	221-10AL700-4-KF16	292.00
6	Electrical Feedthrough, 6 Pins 10A 700V on DN16KF with Socket	74	67	11	221-10AL700-6-KF16	318.00
10	Electrical Feedthrough, 10 Pins 10A 700V on DN16KF with Socket	74	67	13	221-10AL700-10-KF16	504.00
20	Electrical Feedthrough, 20 Pins 10A 700V on DN40KF with Socket	64	88	26	221-10AL700-20-KF40	637.00
	Double Sided Type, Weldable -Version	A	B	D *	Part Number	Euro
4	Electrical Feedthrough, double sided, 4 Pins 10A 700V, Weldable Version, with Socket for Air and Vacuum Side	60	89	34.8	222-10AL700-4D	1002.00
6	Electrical Feedthrough, double sided, 6 Pins 10A 700V, Weldable Version, with Socket for Air and Vacuum Side	60	89	34.8	222-10AL700-6D	1093.00
10	Electrical Feedthrough, double sided, 10 Pins 10A 700V, Weldable Version, with Socket for Air and Vacuum Side	60	89	34.8	222-10AL700-10D	1273.00
20	Electrical Feedthrough, double sided, 20 Pins 10A 700V, Weldable Version, with Socket for Air and Vacuum Side	71	89	63.4	222-10AL700-20D	1567.00
35	Electrical Feedthrough weldable, double sided, 35 Pins 10A 700V, with Socket for Air and Vacuum Side	64	99	63.4	221-10AL700-35D	2842.00
	Double Sided Type, CF-Version	A	B	C	Part Number	Euro
4	DN40CF Electrical Feedthrough, double sided, 4 Pins 10A 700V, with Socket for Air and Vacuum Side	61	87	-	222-10AL700-4D-C40	1089.00
6	DN40CF Electrical Feedthrough, double sided, 6 Pins 10A 700V, with Socket for Air and Vacuum Side	61	87	-	222-10AL700-6D-C40	1266.00
10	DN40CF Electrical Feedthrough, double sided, 10 Pins 10A 700V, with Socket for Air and Vacuum Side	61	87	-	222-10AL700-10D-C40	1360.00
20	DN63CF Electrical Feedthrough, double sided, 20 Pins 10A 700V, with Socket for Air and Vacuum Side	72	87	-	222-10AL700-20D-C63	1790.00

*) D = Weld diameter

Vacuum side Sockets can be found in Section 1.17

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1.13: Thermocouple Feedthroughs Type K, Type C and Type N

Overview of Thermocouple Types

Type	Material	Temp. °C	Remarks
K	+ Chromel - Alumel	-200 ... 1250	Most common type, Alumel magnetic, yellow plug (according ANSI)
C	+ W5%Re - W26%Re	0 ... 2320	Feedthrough made of extension grade material, for high temperatures, red plug
E	+ Chromel - Constantan	-200 ... 900	High Thermocouple voltage,, violet plug
J	+ Iron - Constantan	0 ... 750	Black plug
T	+ Copper - Constantan	-200 ... 350	Blue plug(according ANSI)
R	+ Pt13%Rh - Pt	0 ... 1450	Feedthrough made of extension grade material
S	+ Pt10%Rh - Pt	0 ... 1450	Feedthrough made of extension grade material

Up to. 250° C Extension Grade Material gives the same thermocouple voltage as the original material

Chromel, Alumel and Constantan are registered trademarks

The most common Type K and Type C thermocouples are presented here. Type N are available to order.

Specification Type K

Temp. Region -200°C ... +1250°C

+ Wire Chromel
- Wire Alumel (magnetic)

Specification Type C

Temp. Region 0 ... 2320°C (0... 250°C for Extension grade material)

+ Wire W5%Re
- Wire W26%Re

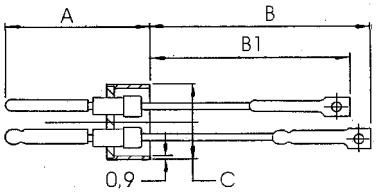
Do not use in oxidising environment.

Specification Type N

Temp. Region -250°C ... +1300°C

- Wire Nicrosil
- Wire Nisil

Dimensions



(B1 = B-25mm)

The - wire on the vacuum side is 25mm shorter than the + wire

pair	Thermocouple Type K Weldable	A	B	C	Part Number	Euro
1	Weldable 1 Pair Type K including Socket	33	114	19	262-TCK-1	98.00
2	Weldable 2 Pairs Type K including Socket	54	114	19	262-TCK-2	193.00
3	Weldable 3 Pairs Type K including Socket	57	114	19	262-TCK-3	332.00
4	Weldable 4 Pairs Type K including Socket	51	114	19	262-TCK-4	449.00
5	Weldable 5 Pairs Type K including Socket	64	114	19	262-TCK-5	598.00

	Thermocouple Type K CF Version	A	B	C	Part Number	Euro
1	DN16CF , 1 Pair, Type K including Socket	47	101	-	262-TCK-1-C16	149.00
2	DN16CF , 2 Pairs, Type K including Sockets	67	101	-	262-TCK-2-C16	242.00
2	DN40CF , 2 Pairs, Type K including Sockets	55	113	-	262-TCK-2-C40	254.00
3	DN16CF , 3 Pairs, Type K including Sockets	71	101	-	262-TCK-3-C16	378.00
3	DN40CF , 3 Pairs, Type K including Sockets	58	115	-	262-TCK-3-C40	385.00
4	DN40CF , 4 Pairs, Type K including Sockets	50	100	-	262-TCK-4-C40	594.00
5	DN40CF , 5 Pairs, Type K including Sockets	57	100	-	262-TCK-5-C40	747.00

	Thermocouple Type K KF Version	A	B	C	Part Number	Euro
1	DN16KF , 1 Pair, Type K including Socket	47	101	-	262-TCK-1-K16	149.00
2	DN16KF , 2 Pairs, Type K including Sockets	67	101	-	262-TCK-2-K16	242.00
3	DN16KF , 3 Pairs, Type K including Sockets	71	101	-	262-TCK-2-K16	378.00
4	DN40KF , 4 Pairs, Type K including Sockets	51	101	-	262-TCK-3-K40	594.00
5	DN40KF , 5 Pairs, Type K including Sockets	58	101	-	262-TCK-3-K40	747.00

	Thermocouple Type C Weldable	A	B	C	Part Number	Euro
1	Weldable , 1 Pair, Type C including Socket	33	114	19	262-TCC-1	98.00
2	Weldable , 2 Pairs, Type C including Sockets	54	114	19	262-TCC-2	193.00

	Thermocouple Type C , CF Version	A	B	C	Part Number	Euro
1	DN16CF , 1 Pair ,Type C, including Socket	47	101	-	262-TCC-1-C16	149.00
2	DN16CF , 2 Pairs ,Type C, including Socket	67	101	-	262-TCC-2-C16	242.00

	Thermocouple Type C , KF Version	A	B	C	Part Number	Euro
1	DN16KF , 1 Pair ,Type C, including Socket	47	101	-	262-TCC-1-K16	149.00
2	DN16KF , 2 Pairs ,Type C, including Socket	67	101	-	262-TCC-2-CK6	242.00

-
- **For Type N , Please call Sales Office**

Versions with MS connectors and combinations with power feedthroughs are listed in Section 1.14

1.14: Thermocouple Feedthroughs Types E, J, T, R, S

Here is a selection of the other thermocouple types.
These feedthroughs are also available in similar configurations to the K-Type versions.
Type R, S and T use screw connectors on both sides of the feedthrough, no plastic plugs. Screws are supplied.

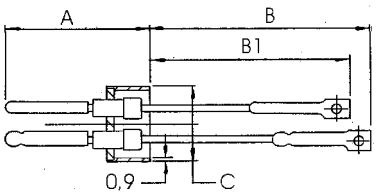
Specification Type E	
Temp. Region	-200°C ... +900°C
+ Wire	Chromel
- Wire	Constantan

Specification Type J	
Temp. Region	0 ... 750°C
+ Wire	Iron
- Wire	Constantan

Specification Type R	
Temp. Region	0 ... 1450°C (0... 250°C for extension material)
+ Wire	Pt13%Rh
- Wire	Pt

Specification Type S	
Temp. Region	0 ... 1450°C (0... 250°C for extension material)
+ Wire	Pt10%Rh
- Wire	Pt

Specification Type T	
Temp. Region	-200 ... 350°C
+ Wire	Copper
- Wire	Constantan



(B1 = B-25mm)

The - wire on the vacuum side is 25mm shorter than the + wire

	Thermocouple Feedthroughs Type E / J / R / S / T Weldable	A	B	C	Part Number	Euro
weld	T/C Type E, 1 pair, weldable, incl. socket	33	114	19	262-TCE-1	110.00
weld	T/C Type J, 1 pair, weldable, incl. socket	33	114	19	262-TCJ-1	110.00
weld	T/C Type R/S, 1 pair, weldable, incl. socket	44	114	19	262-TCR-1	127.00
weld	T/C Type T, 1 pair, weldable, incl. socket	44	114	19	262-TCT-1	127.00

	Thermocouple Feedthroughs Type E / J / R / S / T CF Versions	A	B	C	Part Number	Euro
16CF	DC16CF T/C Type E, 1 pair, incl. socket	33	114	-	262-TC3-1-C16	149.00
16CF	DC16CF T/C Type J, 1 pair, incl. socket	33	114	-	262-TCJ-1-C16	149.00
16CF	DC16CF T/C Type R/S, 1 pair, incl. socket	53	101	-	262-TCR-1-C16	159.00
16CF	DC16CF T/C Type T, 1 pair, incl. socket	53	101	-	262-TCT-1-C16	159.00

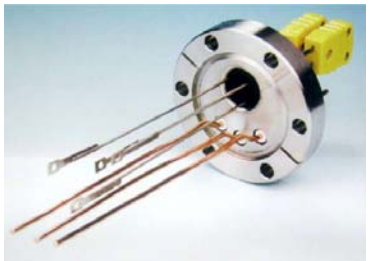
T/C	Ceramic High Temperature Sockets	A	B	C	Part Number	Euro
K	Socket for K Type 650°C	-	-	-	265-TC-CON-K-HT	24.00
C	Socket for C Type 650°C	-	-	-	265-TC-CON-C-HT	24.00
N	Socket for N Type 650°C	-	-	-	265-TC-CON-N-HT	34.00

For Type R and S the same extension grade material is used. So for both types the same feedthrough is used.

The standard connectors can be used for temperatures up to 120°C. If , during bakeout ,temperature measurement is required, ceramic High Temperature Sockets can be used. They withstand temperatures up to 650°C

Thermocouple Wires are listed in Section-1.16. We offer Kapton and PTFE insulated types as well as bare wires.

1.15: Thermocouple Feedthroughs:
- with MS Type Circular Sockets
- combinations with power feedthroughs



Secure and simple connection to thermocouples can be made with circular MS Type plugs. Up to 10 pairs can be connected with one single plug.

Ideal for heaters etc. are flanges, which combine thermocouples and power feedthroughs.
Up to 2x30A together with a thermocouple will fit onto a mini flange DN16CF.

Specification Combination types	
Types possible	-K / C / E / J
16CF	1 Thermocouple 2 x Power (15 / 30A with Cu)
40CF	1 or 2 Thermocouples 3 x Power (30 / 60 /150A with Cu-conductor)

Specification Circular MS Plugs	
Types possible	K as Standard, E / J on request
Nr. of Pairs	2 / 3 / 5 on 16CF 2 / 3 / 5 / 10 on 40CF
Pin ø	1.4mm

	Thermocouple + 2 Power Feedtroughs Weldable	A	B	C	Part Number	Euro
weld	1 Pair Type K T/C + 2 Power 15 Amps Cu , 1KV , Weldable	75	127	19	263-TCK-1-CU15	234.00
weld	1 Pair Type K T/C + 2 Power 30 Amps Cu , 5KV , Weldable	70	127	-	263-TCK-1-CU30	269.00
weld	1 Pair Type K T/C + 2 Power 15 Amps Ni , 1KV , Weldable	75	127	19	263-TCK-1-NI15	234.00
weld	1 Pair Type K T/C + 2 Power 30 Amps Ni , 5KV , Weldable	70	127	19	263-TCK-1-NI30	265.00

	Thermocouple + 2 Power Feedtroughs CF Flange	A	B	C	Part Number	Euro
16CF	1 Pair Type K T/C + 2 Power 15 Amps Cu , 1KV ,	88	114	-	263-TCK-1-CU15-C16	285.00
16CF	1 Pair Type K T/C + 2 Power 30 Amps Cu , 5KV	83	114	-	263-TCK-1-CU30-C16	319.00
16CF	1 Pair Type K T/C + 2 Power 5 Amps Ni , 1KV ,	88	114	-	263-TCK-1-NI5-C16	282.00
16CF	1 Pair Type K T/C + 2 Power 15 Amps Ni , 5KV ,	83	114	-	263-TCK-1-NI15-C16	319.00

	2 X Thermocouple + 3 Power Feedtroughs, CF Flange	A	B	C	Part Number	Euro
40CF	2 Pairs Type K T/C + 3 Power 30 Amps Cu , 5KV	57	128	-	263-TCK-2-CU30-C40	595.00
40CF	2 Pairs Type K T/C + 3 Power 60 Amps Cu , 5KV	59	125	-	263-TCK-2-CU60-C40	623.00
40CF	2 Pairs Type K T/C + 3 Power 150 Amps Cu , 5KV	-	-	-	263-TCK-2-CU150-C40	616.00

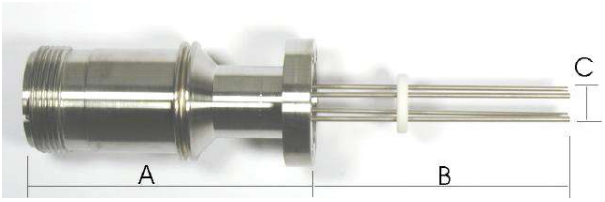
Thermocouple feedthroughs with MS connectors are available with 2 / 3 / 5 / 10 pairs.

Up to 5 pairs will fit on a DN16CF mini flange.

Pin diameter is 1,4mm

	Type K Feedthrough with MS Sockets	A	B	C	Part Number	Euro
16CF	2 Pairs Type K T/C with Circular MS Socket	69	69	13	263-TCK-MS-2-C16	395.00
16CF	3 Pairs Type K T/C with Circular MS Socket	69	69	13	263-TCK-MS-3-C16	438.00
16CF	5 Pairs Type K T/C with Circular MS Socket	69	69	13	263-TCK-MS-5-C16	525.00
40CF	2 Pairs Type K T/C with Circular MS Socket	57	80	10	263-TCK-MS-2-C40	412.00
40CF	3 Pairs Type K T/C with Circular MS Socket	57	80	13	263-TCK-MS-3-C40	442.00
40CF	5 Pairs Type K T/C with Circular MS Socket	57	80	13	263-TCK-MS-5-C40	549.00
40CF	10 Pairs Type K T/C with Circular MS Socket	57	80	13	263-TCK-MS-10-C40	984.00

N.B. For Thermocouple Crimp Connectors , see page 9.



1.16: Thermocouple Wire and Thermocouples

We offer Thermocouple Type K with Kapton and Teflon (PTFE) Isolation. These are suitable for measurements up to 260°C (Kapton) or 220 C (PTFE) .

When higher temperatures are to be measured , we recommend the use of bare thermocouple wires in the high temperature region.

The Thermocouples Type C, R and S contain noble metals and are, therefore, more expensive.

Kapton Isolated Thermocouple

Kapton Thermocouples	
Temp. :	to 260°C (Isolation)
Construction:	Conductor 0.25mm Ø singly isolated Kapton Sheath
Chromel	Colour Natural
Alumel	Colour red
Overall- Ø	1.1mm

PTFE Thermocouples	
Temp.:	to 220°C (Isolation)
Construction:	Conductor 0.5mm Ø Braid, singly isolated PTFE Sheath
Chromel	Colour yellow
Alumel	Colour red

Type	UHV Thermocouple Wires	Qty.	Part number	Euro
K	Kapton Isolated ThermocoupleType K 0.25mm	1m *)	311-KAP-TCK	30.00
K	Kapton Isolated ThermocoupleType K 0.25mm	5m	311-KAP-TCK-5m	128.00
K	Kapton Isolated ThermocoupleType K 0.25mm	10m	311-KAP-TCK-10m	240.00
K	Teflon Isolated ThermocoupleType K 0.5mm braid	1m *)	312-PTFE-TCK	26.00
K	Teflon Isolated ThermocoupleType K 0.5mm braid	5m	311-KAP-TCK-5m	104.00
K	Teflon Isolated ThermocoupleType K 0.5mm braid	10 m	312-PTFE-TCK-10m	188.00

Type	UHV Thermocouple Bare Wires	Qty.	Part number	Euro
K	Bare T/C Wire Type K, 0.25mm,	1,0m *)	313-TCK-025	10.00
C	Bare T/C Wire Type C, 0.13mm, true T/C Wires ,no extension grade materials.	0,3m *)	313-TCC-013	28.00
C	Bare T/C Wire Type C, 0.25mm, true T/C Wires ,no extension grade materials.	0,3m *)	313-TCK-025	54.00
N	Bare T/C Wire Type N, 0.25mm,	1,0m	313-TCC-025	11.00
R	Bare T/C Wire Type R, 0.13mm, true T/C Wires ,no extension grade materials.	1,5m	313-TCR-013	230.00
R	Bare T/C Wire Type R, 0.25mm, true T/C Wires ,no extension grade materials.	1,5m	313-TCR-025	430.00
S	Bare T/C Wire Type S, 0.13mm, true T/C Wires ,no extension grade materials.	1,5m	313-TCS-013	220.00
S	Bare T/C Wire Type S, 0.13mm, true T/C Wires ,no extension grade materials.	1,5m	313-TCS-025	420.00

*): These wires can also be supplied also in multiples of the given lengths as one piece.

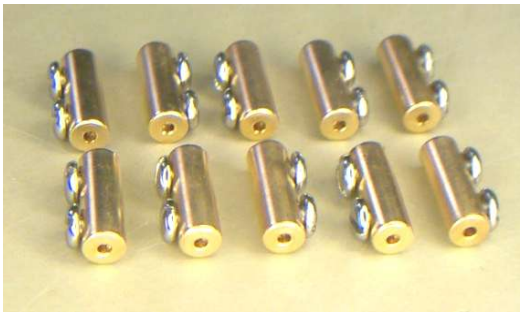
In general Sub-D Feedthroughs can be used in conjunction with Vacuum Thermocouples. Although the feedthrough contact pins are constructed from standard material the error introduced is minimal because of the negligible temperature gradient along the length of the feedthrough conductor pins.

The nominal measurement error for type K thermocouples in the range 0 – 200°C is +/- 2.2K, for higher temperatures 2%.

For high accuracy temperature measurement, a Platinum resistance thermometer is recommended.

1.17: In-Vacuum Socket Connectors

Allectra offers Power-Push-On Sockets for use with Multi-pin Feedthroughs.
Constructed from Copper Beryllium and cleaned for use in UHV. These Connectors come in packets of 10.



360-PIC-1.8 Screw Connectors

Pin Ø	***Push on Connectors***	***Screw Connectors***	***Crimp***	***Rem.***
0.8	-	-	212-PINF-10 + PINM-10	Crimp on f/t pin
1.0	-	360-PIC-1.8	- See Sub-D Section.	Biggest choice
1,3-1,4	360-PPO-1.3	360-PIC-1.8	360-CRIMP-1.3	
2.0	(360-PPO-1.3)	360-PIC-3.0		Special Order
,3-2,4	360-PPO-2.4	360-PIC-3.0	360-CRIMP-2.4	
4.0	360-PPO-4	360-PIC-6.6		PPO silver plated
6.4		360-PIC-6.6		

Specification Screw Type

Current:	20 . 35 A
Temp.:	300°C
Material:	Copper - Beryllium

Specification Push On

Current:	25A
Temp.:	250°C
Material: PPO-4	Copper – Beryllium Contacts Cu-Be, silver plated

360-PPO-1.3 with key

Specification Crimp Pins

Current:	16 A
Temp.:	250°C
Material:	Copper, Gold plated

Crimp Pins for 1.3 to 1.4 mm , suitable for MS Feedthroughs

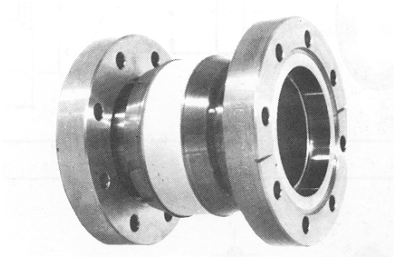
	Screw Connectors	Qty.	Part Number	Euro
Screw	Screw Connector with grub screws , Wire ID max. 1.8mm, 12,5mm long, Pack of 10	10	360-PIC-1.8	61.00
Screw	Screw Connector with grub screws , Wire ID max. 3mm, 14.2mm long, Pack of 10	10	360-PIC-3.0	61.00
Screw	Screw Connector with grub screws , Wire ID max. 6.6mm, 25mm long, Pack of 11	10	360-PIC-6.6	104.00

	Push-On Connectors	Qty.	Part Number	Euro
Socket	Push-On Connector for. 1.27mm Pins, Pack of 10, key included	10	360-PPO-1.3	56.00
Socket	Push-On Connector for. 2.4mm Pins, Pack of 10, key included	10	360-PPO-2.4	56.00
Socket	Push-On Connector for.4mm Pins, Pack of 5, with nuts and washers	5	360-PPO-4	41.00

	Crimps	Qty.	Part Number	Euro
Crimp	Crimp Connector for. 1.3 - 1.5mm Pins, Pack of 5	5	360-CRIMP-1.3	45.00
	Crimp Connector for. 2.3 – 2.4mm Pins, Pack of 5	5	360-CRIMP-2.4	45.00

1.18: Breaks and Electrical Isolators

The small sizes of breaks can be used with gas or liquid lines when electrical isolation is required. These Versions are also suitable for Liquid Nitrogen.
The larger sizes are useful for electrical isolation of sections of vacuum chambers or, for example, the construction of machines which involve high voltages and where electrical isolation of different parts of a large vacuum system are required.
Please note that if the isolators are used to join two separate vacuum systems, a bellows element should also be included to allow for mechanical strain.



Specification Ceramic Breaks

Ceramic: Al_2O_3

Voltage: from 3KV, to 100KV

Temp.: 450°C max. Max. Gradient 25K /min

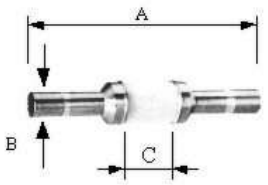


Fig I

Size	Ceramic Breaks	A	B	C	Figure	Part Number	Euro
1/8"	Isolation Break, weldable, 3KV, 3.2mm tube diameter, suitable for Cryogenic use (usable with 1/8" Swagelock)	59	3.2	7.6	I	271-CB-03K-3	67.00
¼"	Isolation Break, weldable, 3KV, for 6,35mm (1/4") tube diameter, suitable for Cryogenic use	78	7.9	17	I	271-CB-06K-6	108.00
16CF	DN16CF Isolation Break, 10KV, 16mm ID	92	16	25	II	271-CB-10K-16-C16	299.00
32mm	Isolation Break, weldable, 15KV, 32mm ID	98	31.8	51	II	271-CB-15K-32	211.00
40CF	DN40CF Isolation Break, 15KV, 32mm ID	107	31.8	51	II	271-CB-15K-32-C40	320.00
60mm	Isolation Break, weldable, 15KV, 60mm ID	92	60.2	19	I	271-CB-15K-60	700.00
63CF	DN63CF Isolation Break, 15KV, 85mm ID	114	60.2	19	II	271-CB-15K-60-C63	1295.00
85mm	Isolation Break, weldable, 35KV, 85mm ID	118	85	60*	III	271-CB-35K-85	842.00
100CF	DN100CF Isolation Break, 35KV, 85mm ID	145	85	60*	III	271-CB-35K-85-C100	1300.00

Stand Off Isolators

Material Steatite (MgO)

273-CSO-10-10

The Voltage figures given opposite are the maximum rating for use in vacuum. For use in air the high voltage rating is 2.5 times smaller.

Voltage	Stand Off Isolators	A	B	C	Figure	Part Number	Euro
7KV	Isolator 10mm High , 6-32 Thread both ends	10	10	-	-	273-CSO-10-10	39.00
10KV	Isolator 12.7mm High , 6-32 Thread both ends	10	13	-	-	273-CSO-13-10	39.00
12KV	Isolator 16mm High , 8-32 Thread both ends	13	16	-	-	273-CSO-16-13	39.00
35KV	Isolator 51mm High ,8-32 Thread both ends	13	51	-	-	273-CSO-50-13	39.00
35KV	Isolator 51mm High , 8-32 Thread both ends	19	51	-	-	273-CSO-50-20	39.00

*) Ceramic has wave shape, leakage path is ca. 90mm

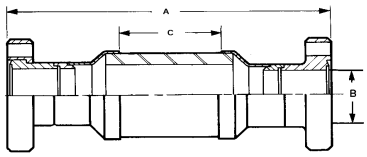


Fig II

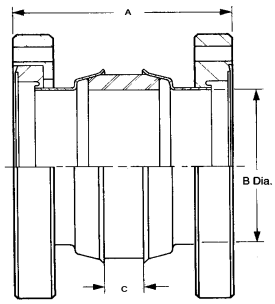


Fig III

1.19: Wires and Cables

There are now many years experience of successfully using the CABURN UHV® type of Kapton isolated wire in UHV. Allectra is pleased to offer the original KAP type of wires together with some new multi-strand types which have a higher flexibility and are easier to use.

All Allectra Kapton wires are prepared for use in UHV and are supplied clean and packed ready for use.

UHV Kapton Wire

Kapton Wire

Temp.: 4K ... 300°C (KAP1and KAP2 to max.260°C)

- See next page for specification-

Kapton Braided Wire

Higher flexibility, ideal for connections to moving parts e.g. on manipulators

Coaxial Cables and Twisted Pairs

Co-axial Kapton Cable

Screened signal cables, 50 Ohm versions for high frequency signals. The twisted pair types are ideal for motor wiring, to avoid EMC problems

Kapton Screened Pair

Ribbon Cables

Compact Kapton Ribbon Cable

Type	Kapton Isolated UHV Wire	∅	V.	Qty.	Part Number	Euro
Wire	Kapton isolated Copper Wire, 0.1mm Diameter, 2KV in UHV	0.1	2KV	5m	311-KAP-010-5m	95.00
Wire	Kapton isolated Copper Wire, 0.25mm Diameter, 2KV in UHV	0.25	2KV	10m	311-KAP-025	65.00
Wire	Kapton isolated Copper Wire, 0.6mm Diameter, 2KV in UHV	0.6	2KV	10m	311-KAP-060	69.00
Wire	Kapton isolated Copper Wire, 1mm Diameter, 10KV in UHV	1	10KV	10m	311-KAP-100	81.00
Wire	Kapton isolated Copper Wire, 1.7mm Diameter, 12KV in UHV	1	12KV	5m	311-KAP-170-5m	97.00
Wire, Silver Coated	Kapton Cable 0.25mm Copper Silver Coated, Type "CABURN UHV"	0.25	4KV	10m	311-KAP1	71.00
Wire, Silver Coated	Kapton Cable 0.6mm Copper Silver Coated, Type "CABURN UHV"	0.6	4KV	10m	311-KAP2	84.00
Braided Wire	Highly flexible Kapton Braided Wire, 7x 0.08mm (ca. 0.25mm Conductor Diameter), Copper Silver Coated,	0.25	600V	10m	311-KAPM-025	81.00
Braided Wire	Highly Flexible Kapton Braided Wire, 19x 0.12mm , 0.7mm Outside Diameter, Copper Silver Coated	0.6	600V	10m	311-KAPM-060	95.00
Braided Wire	Highly flexible Kapton Braided Wire, 19x 0.2mm (ca. 1mm Conductor Diameter), 600V, Copper Silver Coated	1	600V	10m	311-KAPM-100	108.00

	Coaxial Types	∅	V.	Qty.	Part Number	Euro
Coax	Highly flexible Coax wire, 19x 0.12mm, 600V, Copper Silver Coated, 10m		600V	10m	311-KAPM-060-COAX	126.00
50 Ohm	50 Ohm Coaxial-Kapton Cable, 5m long		5KV	5m	311-KAP50	139.00
50 Ohm	50 Ohm Coaxial-Kapton Cable, 1m long		5KV	1m	311-KAP50-1	45.00

	Twisted Pair, screened	∅	V.	Qty.	Part Number	Euro
1 Pair	Twisted Pair coaxial cable, one pair of 19x0.1mm, screened, silver plated	0.6	600V	5m	311-KAPM-060-PAIR1	103.00
2 Pairs	Twisted Pair coaxial cable, two pairs of 19x0.1mm, screened, silver plated	0.6	600V	5m	311-KAPM-060-PAIR2	158.00

	RIBBON Cable	∅	V.	Qty.	Part Number	Euro
10	Kapton Ribbon Cable, 10 wires 7x0.12mm, silver plated		600V	1m	311-KAP-RIB10-1000	74.00
15	Kapton Ribbon Cable, 15 wires 7x0.12mm, silver plated		600V	1m	312-KAP-RIB15-1000	109.00
25	Kapton Ribbon Cable, 25 wires 7x0.12mm, silver plated (two cables, 10 and 15 wires)		600V	1m	313-KAP-RIB25-1000	155.00

Kapton isolated Thermocouples are listed on page 21

1.20: Kapton Wire for UHV - Overview

Allectra offers the original CABURN UHV™ Kapton Wire for UHV and High Vacuum. These wires have silver plated copper conductors wrapped in Kapton Foil as insulator. Additionally Allectra offers the alternative type of dipped wires for optimum UHV performance.

Type	*Construction*	*Cond. Diam. mm*	*Overall Diam. mm*	*V max in vac. [1] V DC*	*I max [2] A*	*Cond. area mm²*	*R [3] Ohm/ km*	*Usage example*
311-KAP-025	Plain copper wire, dipped type	0.25	0.28	2,000	1	0.05	360	Standard instrumentation, radiation environment
311-KAP-060	Plain copper wire, dipped type	0.63	0.69	2,000	5	0.31	58	Standard medium current, radiation environment
311-KAP-100	Plain copper wire, dipped type	1	1.1	10,000	10	0.79	23	High current, high voltage, radiation environment
311-KAP-170	Plain copper wire, dipped type	1.7	1.85	12,000	17	2.2	8	High current, high voltage, radiation environment
311-KAP1	Silver plated copper wire, wrapped type.	0.25	0.55	4,000	1	0.05	360	Caburn UHV© Type, general instrumentation
311-KAP2	Silver plated copper wire, wrapped type.	0.6	0.9	4,000	4.5	0.28	64	Caburn UHV© Type, medium current
311-KAPM-025	Multi Strand silver plated, 7x 0,08mm	0	0.39	600	0.5	0.04	508	High flexible instrumentation, low current
311-KAPM-060	Multi Strand silver plated, 19x 0,1mm	0.6	0.67	600	2.5	0.15	119	High flexible medium current e.g. In-Vacuum Stepper Motors
311-KAPM-100	Multi Strand silver plated, 19x 0,2mm	1	1.17	600	9	0.6	30	High flexible high current, up to 10A for short periods
311-KAP50	50 Ohm coaxial wire, multi strand cond., 7x 0,15mm, silver plated	0.45	2.3	5,000	1	0.12	144	All 50 Ohm connections, signals which need shielding, SMA-use
311-KAPM-060-COAX	Multi Strand 19x0,1mm, screened, insulated	0.6	1.4	600	2.5	0.15	119	Signals

Additional values for 50 Ω Cable: Impedance 50Ω +/-10%, Nom. Capacitance115 pF/m
Attenuation 2.5db/100m at 100MHz,19db/100m at 200MHz

	Dipped Wire	*Wrapped and Multi-Strand Wire*
Temperature range (vacuum)	4K to 260°C, up to 300°C for short periods [4]	4K to 260°C
Dielectric constant (1KHz)	~3.5	~3.1
Dielectric strength (dry) kV/mm	>135	>135
Dissipation factor	0.0015	0.0015
Vacuum range	UHV, $<10^{-11}$ mbar	UHV, $<10^{-11}$ mbar
Radiation resistance	10^9 Rad = 10^7 Gy	10^7 Rad = 10^5 Gy (non-flexing applications)

1 *Max. Voltage in air is significant lower. Allectra does not recommend these wires for air use .*
2 *Max. Current depends strongly on use, specially for vacuum applications. if a coil is formed, a temperature test should be done. As an approximation, 1/3 of the given current can be assumed in this case. As the heat dissipation is very low in vacuum, the cables will get hot if used continuously at the given values.*
3 *Calculated value with conductance of 56 S m /mm² at 20°C*
4 *Temperatures above 260°C will change the electrical specs after some 100 hours, lifetime of cable is reduced.*

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1.21: PTFE Wire, Heaters, Tools, PEEK

For delicate measurement applications Allectra offers a very thin wire, made of Constantan. This material has much lower thermal conductance than Copper. The 0.08mm PTFE wire is easy to strip and can be connected to Sub-D Crimp pins ("S" version)

Kapton Heater Foil is an ideal solution for temperatures up to 200°C. Combined with a cooling system, the desired temperature can be held precisely.

The Miniature heater gives high power on minimal space. It reaches temperatures up to 500°C.

PEEK is a UHV compatible Polymer, which can withstand 250°C without significant outgassing. It is machinable but is somewhat brittle.

Constantan-Wire

Diameter	0.08mm conductor 0.24mm total
Isolation	PTFE

Constantan Wire	Ø	B	C	Qty.	Part Number	Euro
PTFE insulated Constantan Wire, 0.08mm Conductor diameter, 0.24mm total diameter	0,08m m			10m	312-PTFE-008-KON	85.00

KAPTON-Heater Foil

Flexible foil, ideal for preparation chamber etc. Connection wire is PTFE insulated, 300mm long.

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

Kapton Heater Foil	A	B	C	Qty.	Part Number	Euro
Kapton heater foil, 25.4 x 50.8mm, approx. 39 Ohm, max. 200°C, max. 60W				1	317-KAPH-1/2	92.00

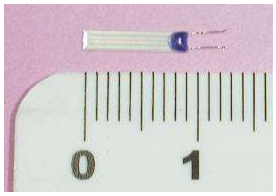
Kapton Heater foil

Miniature-Heater

Max. Temp.	500°C
Material	Al_2O_3 Pt, Glass
Size	1.9 x 9.5mm
Thickness	< 0.2mm (Glass at end typically. 0.4mm)
Connections	0.1mm Pt-wire 3mm long

Miniature Heater	A	B	C	Qty.	Part Number	Euro
Ceramic Heater to 500°C, 9.5 x 2mm, 6.8 Ohm, max. 2A				1	343-HEATER-2x10	52.00

Resistance	typ. 6.8 Ω
I max	2 A
U max	13.5 V
P max	27 W



Miniature-Heater

Kapton Wire Stripper

The Kapton-Isolation coating is difficult to remove without proper tools. The Kapton wire Stripper is adjustable to fit a range of wire sizes.

Kapton Wire Stripper	A	B	C	Qty.	Part Number	Euro
Precision Stripper for 0.12 - 0.4mm in 6 Steps (AWG 36 - 26)				1	321-STRIP04	45.00
Precision Stripper for 0.3 - 1.0mm, in 6 Steps (AWG 28 - 18)				1	321-STRIP10	45.00

PEEK

PEEK (Poly-Ether-Ether-Ketone) is a UHV compatible Polymer, which can withstand 250°C without significant outgassing. It is machinable but is somewhat brittle.
We can offer only the sizes shown!

PEEK	A	B	C	Pack	Part Number	Euro
PEEK Cylinder, 10mm Diameter, 145mm long, max. 250°C				1	351-PEEK-10D	34.00
PEEK Sheet, 20mm Diameter, 145mm long, max. 250°C				1	351-PEEK-20D	92.00
PEEK Sheet, 10 x 50 x 245mm, max. 250°C				1	351-PEEK-10x50	198.00

1.22: High Temperature UHV Lubricant , Thread Lubricant, Pump Oils

In general in UHV, only dry lubricants are permitted. However, in some cases MICROCOTE UHV Lubricant is a useful alternative. This is a High Temperature Low Vapour Pressure Lubricant which is suitable for use in High Vacuum Systems and in certain circumstances also in UHV. It has particularly low outgassing rates at ambient temperatures.

Anti-Seize Thread Lubricant is recommended for the flange bolts of UHV systems to make dismantling after baking easier.

Allectra offers a range of Pump Oils. A selection is described on this page.

MICROCOTE
Temp. Range: -50°C ... 200°C

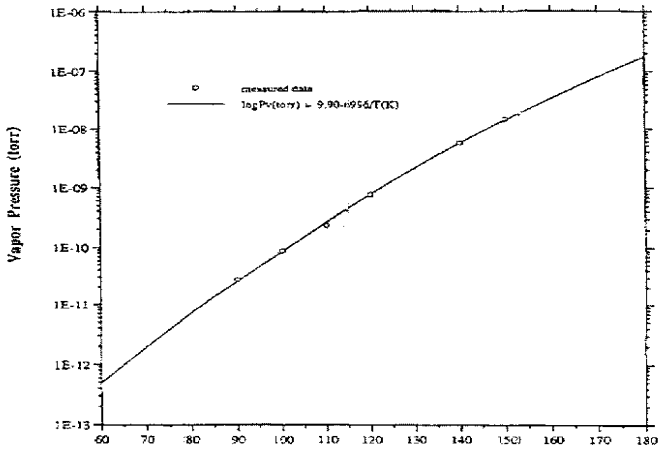
Vapour Pressure at Temperature

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

Mass Loss at 150°C, 48 Std. at 10^{-9} mbar: 0,073%

A special data sheet is available on request

UHV Lubricant	Qty.	Part Number	Euro
Microcote 296 UHV Lubricant, 5 x 10-13 mbar Vapour Pressure at Room Temperature	10g	330-MCOTE-296	120.00



ANTI-SIEZE THREAD LUBRICANT

Temperature: to 1400°C
Colour: White

This Anti Seize comes in a handy container!

Thread Lubricant	Qty.	Part Number	Euro
Screw Lubricant „Anti-Seize", for Stainless Steel Screws	30g	330-ANTISEIZE	14.00

Pump Oil

Some examples of pump oils are shown. Please contact the sales office for a quotation for other oils.

Pump Oil	Qty.	Part Number	Euro
Silicone Oil for Diffusion Pumps compatible with DC-704	0,5l	331-S-04V-500ml	150.00
Pump Oil for Mechanical Pumps , high thermal and chemical stability	1l	331-TW100	14.00

UHV Solder

Flow Temperature: 330 °C
Service Temperature : to 250°C
Vapour Pressure: <1.5x10

UHV Solder	Qty.	Part Number	Euro
UHV Solder , bakeable to 250°C including flux	0,5m	315-SOLDER	35.00

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2.1: Quartz Sensor Heads and Film Thickness Monitor

The sensor heads and thin film monitors from Sycon are easy to use and accurate. They use an in-vacuum quartz head as sensor. A large display with backlight allows easy read out the measured values.
The unit is fully equipped with RS232 interface, relay outputs and digital inputs.

710-STM-100MF Film Thickness Monitor

Specification	
Sensor	6MHz Quartz water cooled
Electronics	
Voltage	110/230V AC
Speed	4 measurement./s
Resolution	0.1Å/s
Mass. range	500 kÅ (Al)
Outputs	4 Relay for Shutter Thickness Time Quartz-Error
Analogue output (for Rate or Film Thickness)	0 .. 10V
Inputs	TTL compatible Open Shutter Close Shutter Zero Thickness Zero Time
Interface	RS232 Standard RS488 Option

In-Vacuum Heads	Part Number	Euro
Low Profile Head, Quartz Crystal parallel to water lines, 76cm water lines	710-LPSH	498.00
Right Angle Head, Quartz Crystal perpendicular to water lines, with 76cm water lines	710-RASH	599.00

In-Vacuum Cable	Part Number	Euro
Vacuum-Cable for LPSH and RASH,750mm long	710-IVC-250	82.00
Vacuum-Cable for LPSH and RASH,250mm long	710-IVC-750	90.00

Feedthroughs	Part Number	Euro
40CF Flange with 1x BNC -Microdot and 2 Water lines	710-BNC1-W2-C40	476.00

Swagelock Connectors	Part Number	Euro
Swagelock Connector for connection of sensor head water lines to feedthrough	710-SW-32-48	27.00

Oscillator	Part Number	Euro
Oscillator for 6 MHz Quartz head	710-OSC	212.00
Oscillator for 6 MHz Quartz head, including BNC cables 15cm + 3m and 5 replacement crystals	710-OSC-PACK	297.00

Electronics	Part Number	Euro
Rate Thickness Monitor with RS232 interface	710-STM-100MF	1892.00

Packages	Part Number	Euro
Low Profile Sensor Head, In-Vacuum Cable, DN40CF f/t, Swagelock Connectors, Oscillator, BNC-Cable, 5x replacement quartzes	710-LP-PACK1	
Right Angle Sensor Head, In-Vacuum Cable, DN40CF f/t, Swagelock Connectors, Oscillator, BNC-Cable, 5x replacement quartzes	710-RA-PACK1	

The Packages contain all required parts without electronics 710-STM100MF:
- Sensor Head
- In Vacuum Cable
- Feedthrough(BNC-Microdot + Water) on DN40CF
- Swagelock Connectors
- Oscillator
- BNC Cable (3m + 15cm)
- Replacement Quartz Crystals

Feedthrough CF40

In-Vacuum Cable

Other Models, e.g. welded versions with fixed lengths, double Heads or versions with shutter are available on request.

2.2: Standard UHV and Sapphire Viewports

Standard Glass Viewports are suitable for all general purpose uses, especially direct observation of processes within the vacuum chamber.

Standard viewports are on CF flanges but optionally can be supplied on KF or ISO-K (LF) flanges.

Lead glass screens are available for radiation protection purposes.

Viewport shutters which prevent deposition processes from clouding the viewport are also available.

Specification	
Vacuum:	UHV
Materials:	
Glass	Kodial
Seal	Kovar (NiFe Alloy)
Bakeable	400°C (CF Flange)
Max Gradient	5K/min
Transmission	ca. 300 - 2500nm
Annealed gaskets are recommended for CF Flanges !	

	Glass Viewport	View Diam.	Qty	Part Number	Euro
DN16CF	Viewport, Standard Glass, DN16CF	16	1	120-VPG-CF016	95.00
DN40CF	Viewport, Standard Glass, DN40CF	38	1	120-VPG-CF040	84.00
DN63CF	Viewport, Standard Glass, DN63CF	63	1	120-VPG-CF063	132.00
DN100CF	Viewport, Standard Glass, DN100CF	90	1	120-VPG-CF100	268.00
DN160CF	Viewport, Standard Glass, DN160CF	135	1	120-VPG-CF160	429.00

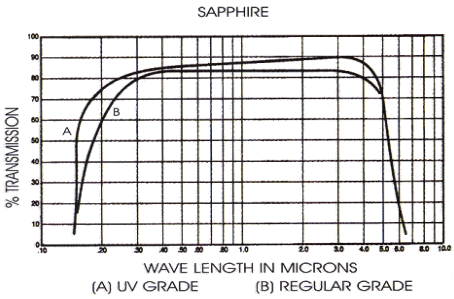
For Viewports on KF or ISO-LF Flanges , please call the Sales Office

Sapphire Viewport

Sapphire has a wide transmission range and is useful from around 180nm to 5500nm. An advantage of Sapphire over Quartz is the higher bakeout temperature of up to 400°C.

Specification	
Vacuum:	UHV
Material	Sapphire, UV Grade 90° Orientation
Surface Quality	50-20 Scratch-Dig
Bakeability Gradient	400°C (CF Flange) 5K/min
Transmission	ca. 180 - 5500nm
Annealed gaskets are recommended for CF Flanges !	

	Sapphire Viewport	View Diam.	Qty.	Part Number	Euro
16CF	Sapphire Viewport on DN16CF, 15mm View Diameter, UV-grade	15	1	130-VPS-CF16	315.00
40CF	Sapphire Viewport on DN40CF, 24mm View Diameter, UV-grade	24	1	130-VPS-CF40	389.00
63CF	Sapphire Viewport on DN63CF, 36mm View Diameter, regular grade	36	1	130-VPS-CF63-36	969.00
63CF	Sapphire Viewport on DN63CF, 49.3mm View Diameter, regular grade	49	1	130-VPS-CF63-49	1225.00



2.3: Fused Silica (Quartz) Viewports

Fused Silica Viewports are offered for the most demanding optical performance compared to standard glass. In particular, they offer higher transmission over a wider range of wavelengths. Fused Silica has better homogeneity than mineral quartz.

Three qualities are offered, standard, the high purity (lowest inclusion) DUV grade and the Excimer grade which has the widest transmission for both IR and UV light.

General Specification	
Vacuum:	UHV
Max. Temperature:	200°C
Max. Gradient	5K/min
Transmission for visible light:	>90%
Gaskets:	Annealed gaskets are recommended for CF Flanges!

	Quartz Viewport, Standard UV Quality	A	Qty.	Part Number	Euro
DN40CF	DN40CF Quartz Viewport, Standard UV-Quality, View Diameter 35mm	35	1	110-VPQZ-CF040-UV	265.00
DN63CF	DN63CF Quartz Viewport, Standard UV-Quality, View Diameter 68mm	68	1	110-VPQZ-CF063-UV	891.00
DN100CF	DN100CF Quartz Viewport, Standard UV-Quality, View Diameter 98mm	98	1	110-VPQZ-CF100-UV	1098.00
DN160CF	DN160CF Quartz Viewport, Standard UV-Quality, View Diameter 137mm	137	1	110-VPQZ-CF160-UV	3256.00
DN200CF	DN200CF Quartz Viewport, Standard UV-Quality, View Diameter 198mm	198	1	110-VPQZ-CF200-UV	4225.00

Specification Standard-UV Quality	
Transmission	
from	200 nm
to	2000 nm
At 185nm	>80%
Homogeneity	2D-Material
Inclusions	to 0.25mm² (per 100cm³)

	Quartz Viewport, DUV Quality	A	Qty.	Part Number	Euro
DN40CF	DN40CF Quartz Viewport, DUV-Quality, View Diameter 35mm	35	1	110-VPQZ-CF040-DUV	493.00
DN63CF	DN63CF Quartz Viewport, DUV-Quality, View Diameter 68mm	68	1	110-VPQZ-CF063-DUV	1597.00
DN100CF	DN100CF Quartz Viewport, DUV-Quality, View Diameter 98mm	98	1	110-VPQZ-CF100-DUV	2725.00
DN160CF	DN160CF Quartz Viewport, DUV-Quality, View Diameter 137mm	137	1	110-VPQZ-CF160-DUV	7652.00
DN200CF	DN200CF Quartz Viewport, DUV-Quality, View Diameter 198mm	198	1	110-VPQZ-CF200-DUV	POA

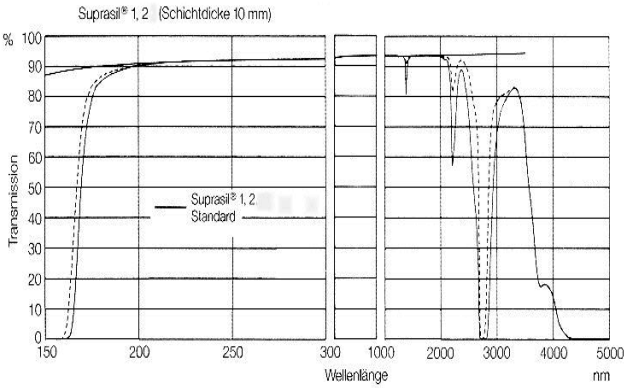
Specification DUV-Material	
Transmission	
from	200 nm
to	2000 nm
At 185nm	>80%
Homogeneity	3D-Material
Inclusions	to 0.03mm² (per 100cm³)

	Quartz Viewport, Excimer Quality	A	Qty.	Part Number	Euro
DN40CF	DN40CF Quartz Viewport, Excimer-Quality, View Diameter 35mm	35	1	110-VPQZ-CF040-EX	1294.00
DN63CF	DN63CF Quartz Viewport, Excimer-Quality, View Diameter 68mm	68	1	110-VPQZ-CF063-EX	3479.00

A= View diameter

Specification Excimer-Material	
Transmission	
from	185 nm
to	2200 nm
At 185nm	>85%
Homogeneity	3D-Material
Inclusions	to 0.03mm² (per 100cm³)

Glass thickness	DN40CF	3,3mm
	DN63CF / DN100CF	6,3mm
	DN160CF / DN200CF	9,4mm



2.4: Viewport Shutter , Lead Glass Screen and Special Materials

Viewport shutters protect the viewport from deposited materials. Allectra Viewport shutters are suitable for MBE, Sputter Coating and similar techniques. The shutter plate is curved to fit the inside of the port and is easily demountable for cleaning or replacement.

Lead Glass Screens fit onto the outside of Viewports and offer approximately 2mm lead equivalent for radiation protection purposes.

140-VPSH-C63 Viewport Shutter

Specification	
Vacuum:	UHV, < 10^{-10} mbar
Construction	All metal
Bakeable:	to 250°C
Mechanism: coupled, can be	Mechanically fixed in open or closed position
Flange:	Double sided CF with through holes

The shutter is easily demountable and can be quickly changed. The shape is optimised to fit within the curvature of a standard port.

	Viewport Shutter	A	B	Qty.	Part Number	Euro
63CF	DN63CF Shutter with bellows sealed rotary drive			1	140-VPSH-C063	1152.00
100CF	DN100CF Shutter with bellows sealed rotary drive			1	140-VPSH-C100	1176.00
160CF	DN160CF Shutter with bellows sealed rotary drive			1	140-VPSH-C160	1650.00

ISO-K versions are available to special order for sizes 63 , 100 and 160.

Lead Glass Safety Screen	
Thickness:	5.6mm
Lead Equivalent:	1.6mm (at 110KV) 1.4mm(at 200KV)

The Lead Glass Safety Screen is complete with a stainless steel mounting ring and extra long bolts . It can be mounted onto the outside of any zero length style viewport of the same size.

	Lead Glass Safety Screen	Qty	Part Number	Euro
40CF	Lead Glass Screen , Holder and Bolts for DN40CF	1	140-LG-C40	99.00
63CF	Lead Glass Screen , Holder and Bolts for DN63CF	1	140-LG-C63	175.00
100CF	Lead Glass Screen , Holder and Bolts for DN100CF	1	140-LG-C100	275.00
160CF	Lead Glass Screen , Holder and Bolts for DN160CF		140-LG-C160	POA

Special Materials Viewports

Allectra offers a full range of Special Materials Vacuum Viewports including:

Beryllium (with optional water cooling)

Magnesium Fluoride, Calcium Fluoride, Crystal Quartz,

Zinc Selenide, Silicon and Germanium.

Please call sales office for details

140-LG-C63 Lead Glass Safety Screen

2.5: GATE VALVES , UHV AND HIGH VACUUM

Robust Gate Valves designed for Semiconductor Applications with manual or pneumatic operation
Operation life in excess of 100,000 cycles
Metric construction
Metal Sealed Bonnet with Viton O ring Gate Seal
Pneumatic version includes position indicator as standard

UHV Gate Valves

Specification – Manual

Sizes: DN40CF – DN250CF
Max. Temperature: open 230°C
closed 150°C
Bellows: Edge welded
Finish: Electro-polished
Gasket Gate: Viton
Bonnet: Metal
Leakrate: $<2*10^{-10}$ mbar l /s
Orientation: Any

Specification Pneumatic

Air Cylinder: Al-Cylinder
Air Pressure: 4.8– 6.9 bar
adjustable closure speed
Solenoid: 24V DC Standard
Position Indicator:Standard, max. 200mA

Gaskets

Replacement Gaskets Sets including both Viton and Metal gaskets are offered

Spare Parts

A full range of spare parts including bellows ,and pneumatic cylinders are available on request.

Dimensions

Please ask sales office for data sheet

Size	Manual Gate Valves, CF	width	Part Number	Euro
40CF	Gate Valve ,manual, DN40CF	67.2	511-GV-CF40	1260.00
63CF	Gate Valve, manual, DN63CF	67.2	511-GV-CF63	1710.00
100CF	Gate Valve manual, DN100CF	79.8	511-GV-CF100	2335.00
160CF	Gate Valve manual, DN160CF	86.8	511-GV-CF160	3148.00
200CF	Gate Valve manual, DN200CF	91.2	511-GV-CF200	4150.00
250CF	Gate Valve manual, DN250CF	105	511-GV-CF250	6594.00

	Manual Gate Valves, ISO-K (LF)	width	Part Number	Euro
40KF	Gate Valve manual, 40KF	56.5	511-GV-KF40	1209.00
63-ISO	Gate Valve manual, DN63-ISO-F	56.5	511-GV-ISO63	1650.00
100-ISO	Gate Valve manual, DN100-ISO-F	64	511-GV-ISO100	2234.00
160-ISO	Gate Valve manual, DN160-ISO-F	66	511-GV-ISO160	2948.00
200-ISO	Gate Valve manual, DN200-ISO-F	74	511-GV-ISO200	3881.00
250-ISO	Gate Valve manual, DN250-ISO-F	80	511-GV-ISO250	6255.00

	Gate Valve Pneumatic , 24v DC, CF	width	Part Number	Euro
40CF	Gate Valve pneumatic, DN40CF	67.2	511-GV-CF40-P	1564.00
63CF	Gate Valve pneumatic, DN63CF	67.2	511-GV-CF63-P	1982.00
100CF	Gate Valve pneumatic, DN100CF	79.8	511-GV-CF100-P	2550.00
160CF	Gate Valve pneumatic, DN160CF	86.8	511-GV-CF160-P	3396.00
200CF	Gate Valve pneumatic, DN200CF	91.2	511-GV-CF200-P	4378.00
250CF	Gate Valve pneumatic, DN250CF	105	511-GV-CF250-P	6852.00

	Gate Valve pneumatic, 24v DC, ISO-F	width	Part Number	Euro
40KF	Gate Valve pneumatic, 40KF	56.5	511-GV-KF40-P	1460.00
63-ISO	Gate Valve pneumatic, DN63-ISO-F	56.5	511-GV-ISO63-P	1841.00
100-ISO	Gate Valve pneumatic, DN100-ISO-F	64	511-GV-ISO100-P	2388.00
160-ISO	Gate Valve pneumatic, DN160-IFO-F	66	511-GV-ISO160-P	3274.00
200-ISO	Gate Valve pneumatic, DN200-ISO-F	74	511-GV-ISO200-P	4148.00
250-ISO	Gate Valve pneumatic, DN250-ISO-F	80	511-GV-ISO250-P	6390.00

'width' means the flange face to flange face dimension of the valve.

N.B. All ISO LF style gate valves have ISO-F Bolt flanges

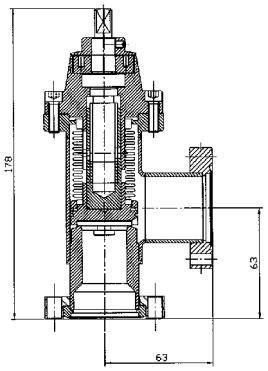
2.6: All Metal and Viton Sealed Right Angle UHV Valves

512-AVM-CF40 All Metal Valve

When bakeability is required in UHV Systems, all metal valves are necessary. Allectra offers as standard the popular DN40CF size

For less demanding applications , viton sealed right angle valves are offered.

Specification	All Metal Valves
Size:	DN40CF Both flanges
rotatable	
Seal:	OFE Copper /knife edge
Temperature:	450° open 300° closed



Specification Viton sealed valves	
Vacuum Seal:	Viton
Leakrate	<1*10 $^{-9}$ mbar l /s
Bakeable:	150° open or closed

	UHV All Metal Valve Stainless Steel	A	B	Qty.	Part Number	Euro
DN40CF	DN40CF All Metal-Valve, Manual	63		1	512-AVM-CF40	596.00
	Replacement Copper Seal for DN40CF All Metal-Valve			1	512-AVM-G-CF40	49.00
	Tool for Exchanging Copper Seal			1	512-AVM-GT-CF40	46.00

	VALVES	A	B	Qty.	Part Number	Euro
16CF	DN16CF Stainless Steel Valve , Manual, Viton Gasket			1	511-AV-CF16-V	378.00
40CF	DN40CF Stainless Steel Valve , Manual, Viton Gasket			1	511-AV-CF40-V	509.00
16KF	DN16KF Aluminium Valve , Manual, Viton Gasket			1	511-AV-KF16-V-ALU	190.00
16KF	DN16KF Stainless Steel Valve , Manual, Viton Gasket			1	511-AV-KF16-V	292.00
25KF	DN25KF Aluminium Valve , Manual, Viton Gasket			1	511-AV-KF25-V-ALU	230.00
25KF	DN25KF Stainless Steel Valve , Manual, Viton Gasket			1	511-AV-KF25-V	331.00
40KF	DN40KF Aluminium Valve , Manual, Viton Gasket			1	511-AV-KF40-V-ALU	303.00
40KF	DN40KF Stainless Steel Valve , Manual, Viton Gasket			1	511-AV-KF40-V	395.00
50KF	DN50KF Aluminium Valve , Manual, Viton Gasket			1	511-AV-KF50-V-ALU	481.00
50KF	DN50KF Stainless Steel Valve , Manual, Viton Gasket			1	511-AV-KF50-V	649.00

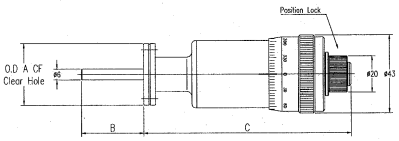
	Viton Right Angle Valves Pneumatic	A	B	Qty.	Part Number	Euro
16CF	DN16CF Stainless Steel Valve , Pneumatic, Viton Gasket			1	511-AVP-CF16-V	496.00
40CF	DN40CF Stainless Steel Valve , Pneumatic, Viton Gasket			1	511-AVP-CF40-V	633.00
16KF	DN16KF Aluminium Valve , Pneumatic, Viton Gasket			1	511-AVP-KF16-V-ALU	311.00
25KF	DN25KF Aluminium Valve , Pneumatic, Viton Gasket			1	511-AVP-KF25-V-ALU	356.00
40KF	DN40KF Aluminium Valve , Pneumatic, Viton Gasket			1	511-AVP-KF40-V-ALU	485.00

2.7: Rotary and Linear Drives

Allectra offers high quality UHV Rotary Motion Drives , Linear Drives (Z Shifters) and UHV Manipulators.
The Product Range includes standard Bellows Sealed Rotary Motion Drives, Linear Drives and complete X-Y-Z UHV Manipulators.

Magnetic coupled transporters are ideal for long distance movements, e.g. for introducing samples. The versions offered come with all metal bearings, are bakeable to 200°C and can be used in proper UHV environments.

Specification Rotary Drive	
Vacuum:	UHV, bellows sealed
Bakeout:	200°C
Construction:	metric, 6mm Axis
Scale	360° with 2.5° marks



Rotary Drive

Specification Magnetic Transporter	
Vacuum:	UHV
Rotation	Continuous
Z-Travel	500/600/800/1000mm
Bakeout:	200°C
Construction:	All metal bearings, Guide rod as option
Axis	15.8mm diam. with M5 thread

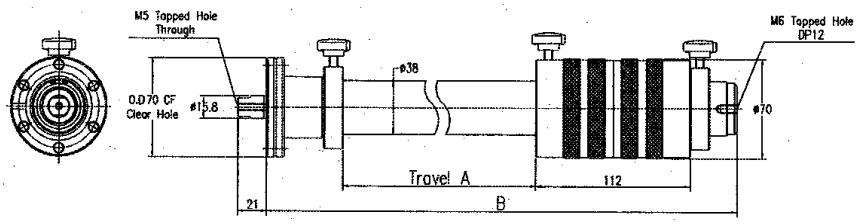
Rotary Drive	Qty.	Part Number	Euro
Rotary Drive, UHV, 6mm Shaft Diameter, Bakeable to 250°C	1	611-WRT-C16	498.00

Magnetically Coupled Rotary Drive	Qty.	Part Number	Euro
Magnetic Rotary Drive, UHV, Bakeable to 300°C	1	611-WRT-C16	POA

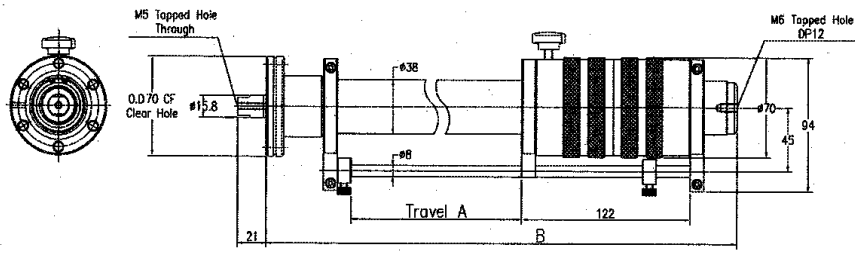
Linear Drive	Qty.	Part Number	Euro
Linear Drive Push-Pull, UHV, 50mm Travel,	1	612-WPLM-C16-2	POA
Linear Drive with Micrometer, UHV, 50mm Travel	1	612-WPPLM-C16-2	POA

UHV Magnetic Transporter Linear + Rotation	Qty.	Part Number	Euro
Magnetic Linear Rotary Transporter, 500mm Travel	1	615-MTP-0500UHV	2643.00
Magnetic Linear Rotary Transporter, 600mm Travel	1	615-MTP-0600UHV	2883.00
Magnetic Linear Rotary Transporter, 800mm Travel	1	615-MTP-0800UHV	3127.00
Magnetic Linear Rotary Transporter, 1000mm Travel	1	615-MTP-1000UHV	3369.00
Guide Rod Option	1	615-LG-OPT	271.00

For details of the Magnetically Coupled UHV Rotary Drive , please call the Sales Office.



STANDARD MAGNETIC SAMPLE PROBE



STANDARD MAGNETIC SAMPLE PROBE with GUIDE

For Other UHV Manipulator Products Please Call Sales Office!-

2.8: UHV Z- Manipulators / UHV XYZ- Manipulators

Z-manipulators from DN40CF with 25mm travel to DN100CF with some hundreds of mm travel are presented here. Other sizes / travels are available on request.

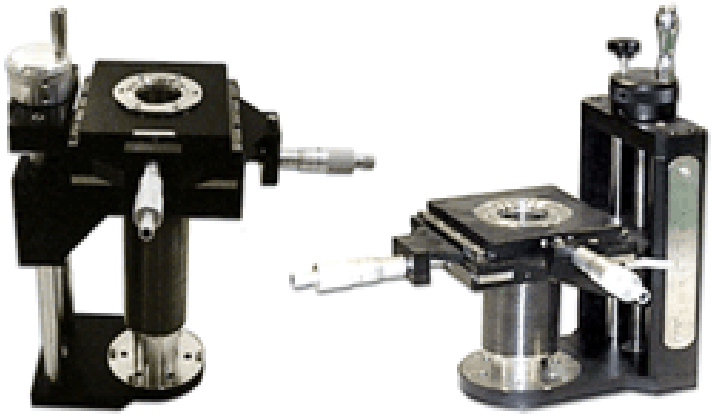
Compact XYZ-Manipulators can be offered up to 150mm Z travel and +/-10mm XY travel. With Precision Manipulators XY travels of +/- 25mm are offered.

Specification	
Vacuum:	UHV
Bakeout:	200°C
Construction:	metric
Standard Bellow ID DN40CF	36mm

	Z-Manipulators , Z Shifters	Qty.	Part Number	Euro
DN40CF	Linear-Manipulator, 25mm Travel, >36mm Inner Diameter	1	621-WWLT-C40-025	1133.00
DN40CF	Linear-Manipulator, 50mm Travel, >36mm Inner Diameter	1	621-WWLT-C40-050	1280.00
DN40CF	Linear-Manipulator, 100mm Travel, >36mm Inner Diameter	1	621-WWLT-C40-100	1674.00
DN40CF	Linear-Manipulator, 152mm Travel, >36mm Inner Diameter	1	621-WWLT-C40-150	2216.00
DN40CF	Linear-Manipulator, 406mm Travel, >36mm Inner Diameter	1	621-WLLT-C040-400	6450.00
DN63CF	Linear-Manipulator, 305mm Travel, >63mm Inner Diameter	1	621-WLLT-C063-300	6300.00
DN100CF	Linear-Manipulator, 305mm Travel, >100mm Inner Diameter	1	621-WLLT-C100-300	8420.00

	X-Y-Z Manipulators	Qty.	Part Number	Euro
DN40CF	X-Y-Z Manipulator, 10mm X-Y, 50mm Z Travel, Micrometer for X-Y	1	623-CMX-C40-050	3750.00
DN40CF	X-Y-Z Manipulator, 10mm X-Y, 100mm Z Travel, Micrometer for X-Y	1	623-CMX-C40-100	4250.00
DN40CF	X-Y-Z Manipulator, 10mm X-Y, 150mm Z Travel, Micrometer for X-Y	1	623-CMX-C40-150	5240.00

Z-Manipulator



UHV Sample Manipulators

Port- Aligner

- For Other UHV Manipulator Products Please Call Sales Office!-

2.9: In-Vacuum Stepper Motors

Allectra offers a range of In-Vacuum stepper Motors both High Vacuum and UHV types as an alternative to mechanical linkages for motion in vacuum. Allectra In-Vacuum Motors are Conventional 2/4 phase 200 step per revolution and may be driven by a wide range of Stepper Motor Control Systems. They are suitable for Micro-Step Control and may be driven in Uni-Polar or Bi-Polar Mode.
The advantage of using In-Vacuum motors is that the required motion may be delivered exactly as required without reference to the System Ports . They are particularly suitable for Automated Sample Handling situations and use in positions where access is restricted such as radiation areas.

Stepper Motors

671-SM25-HV High Vacuum Motor

Specification HV	
Vacuum:	10^{-7}mbar
Temperature:	to 200°C bake out to 150°C in Service
Thermocouple:	Optional

Specification UHV	
Vacuum:	10^{-11}mbar
Temperature:	to 280°C bake out to 200°C in Service
Thermocouple:	Type K built in
Radiation Resistance:	to 10^{6} J/kg

General Specification Both Types	
Steps	200 per revolution (Size 42: 200/ 500 Steps)
Step Angle:	1.8° Full Step
Type:	2-Phase Motor, 4 Wire Connection
Shaft: as Torque:	Double Shaft Type standard from 3,4mNm to 630mNm
Wire Length:	500mm

19	Stepper Motor UHV, 200 Steps ,1.2A per Phase, 3.4mNm, with Thermocouple Type K, and Double Shaft	671-SM19-UHV200-1,2	1209.00
25	Stepper Motor High Vacuum, 200 Steps, 1.2A per Phase, 12mNm, with Double Shaft	671-SM25-HV-200-1,2	527.00
25	Stepper Motor , High Vacuum, 500 Steps, 1.2A per Phase, 12mNm, with Double Shaft	671-SM25-HV-500-1,2	576.00
25	Stepper Motor , UHV Version, 200 Steps, 1.2A per Phase, 12mNm, with K Thermocouple Type K, with Double Shaft	671-SM25-UHV200-1,2	1148.00
25	Stepper Motor, UHV Version, 500 Steps, 1.2A per Phase, 12mNm, with K Thermocouple Type K, with Double Shaft	671-SM25-UHV500-1,2	1207.00
32	Stepper Motor , HV Version, 200 Steps, 1.2A per Phase, 45mNm, with Double Shaft	671-SM32-HV-200-1,2	505.00
32	Stepper Motor, HV Version, 200 Steps, 1.2A per Phase, 68mNm, with Double Shaft, high torque type	671-SM32-HV200-HT	661.00
32	Stepper Motor , UHV Version, 200 Steps, 1.2A per Phase, 45mNm, with K Thermocouple Type K, with Double Shaft	671-SM32-UHV200-1,2	1097.00
32	Stepper Motor , UHV Version, 200 Steps, 1.2A per Phase, 68mNm, with K Thermocouple Type K, with Double Shaft, high torque	671-SM32-UHV200-HT	1456.00
42	Stepper Motor HV Version, 500 Steps2,5A per Phase, 130mNm, with Double Shaft	671-SM42-HV-500-2,5	664.00
42	Stepper Motor , HV Version, 200 Steps, 2,5A per Phase, 235mNm, with Double Shaft, high torque type	671-SM42-HV-200-HT	928.00
42	Stepper Motor , UHV Version, 500 Steps, 2,5A per Phase, 130mNm, with Thermocouple Type K, with Double Shaft	671-SM42-UHV500-2,5	1420.00
42	Stepper Motor , UHV Version, 200 Steps, 2,5A per Phase, 235mNm, with K Thermocouple Type K, with Double Shaft, high Torque Type	671-SM42-UHV200-HT	2067.00
52	Stepper Motor , UHV Version, 200 Steps, 1.2A per Phase, 405mNm, with Thermocouple Type K, with Double Shaft	671-SM52-UHV200-1,2	1760.00
60	Stepper Motor , NEMA 23, HV Version, 200 Steps, 2.5A per Phase, 630 mNm, with Double Shaft	671-SM60-HV-200-2,5	838.00
60	Stepper Motor , NEMA 23, UHV Version, 200 Steps2,5 A per Phase, 630 mNm, with Double Shaft, with built in Thermocouple Type K	671-SM60UHV-200-2,5	1862.00

- The UHV Versions carry a yellow identification mark.

-

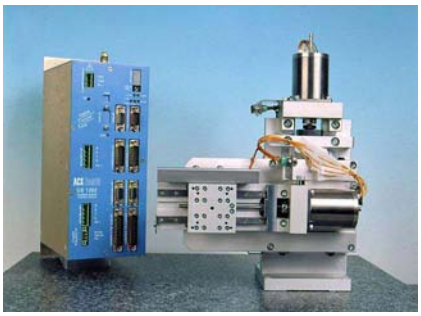
We are happy to advise on the best choice of motor for your application.
Full dimensions available on request. Please call sales office.

2.10: Precision Movement Stages for Use in High Vacuum and UHV

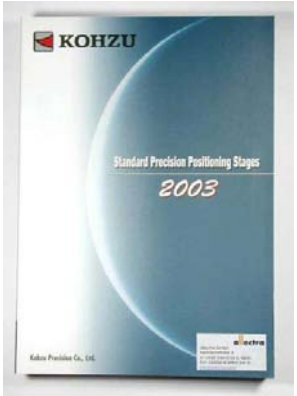
Allectra offers a range of Precision Stages for Sub-micron linear, rotation or swivel motion. These are based on the well known Kohzu range of Precision Stages. A catalogue of Kohzu stages is available on request.

Vacuum precision Stages include High vacuum or UHV 2-phase Stepper Motors with 200 steps per revolution or optionally 500 steps per revolution. These motors are suitable for micro-step control.

Vacuum Stages include UHV compatible limit switches and shielded Kapton wiring. Vacuum connectors and feedthroughs are also available.



Precision x,z Stage with 25 mm travel and accuracy of 2.5 microns per half step. Optionally 1 micron per half step if 500 step motors are used. Vacuum specification > 10^{-7} mbar. Two motor Programmable Controller

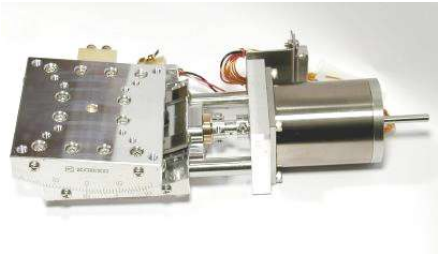


The Kohzu catalogue gives detailed specifications for over 300 High Quality Precision Stages for linear , rotation and swivel motion. Please ask the Allectra sales office for a copy.

Specification High Vacuum Stages

Materials:	Stainless Steel, Aluminium (no anodising) , Kapton, Low Vapour Pressure Lubricant
Linear Motion:	15mm to 300mm
Guide Mechanism:	Precision Crossed Roller
Lead mechanism:	Ground Screw
Resolution (per half step):	optimum 0.125μ, typically 1μ
Vacuum Compatibility:	10^{-7} mbar
Bake Temperature:	not bakeable
Stepper Motor:	High Vacuum 2-phase stepper 200 or 500 step per revolution, 4 wire type

Recommended Feedthrough: Sub-miniature D 9 way



High Vacuum Swivel Stage

Specification UHV Stages

Materials:	Stainless Steel, Kapton, UHV lubricant
Linear Motion:	15mm to 300mm
Guide Mechanism:	Precision Crossed Roller
Lead mechanism :	Ground Screw
Resolution (per half step):	optimum 0.125μ, typically 1 μ
Vacuum Compatibility:	10^{-10} mbar
Bake Temperature:	180^{0}C
Stepper Motor:	UHV 2 phase stepper 200 or 500 step per revolution, 4 wire type fitted with built in K type thermocouple

Recommended Feedthrough: Sub-miniature D 9 way

2.11: Chambers and Specials

Allectra offers a customer fabrication service to build UHV chambers, High Vacuum Chambers and special components to customer order. Preparation of Engineering Drawings ,High quality 316L Stainless Steel fabrication, TIG welding and cleaning are standard. UHV Chambers are annealed in a vacuum furnace at 1050°C for stress relief.

Allectra also offers UHV chambers in Mu-Metal for applications where Magnetic Fields must be excluded.

Aluminum UHV Chambers can be built and fitted with Atlas Aluminum to Stainless Steel Transition Flanges in order that standard components can be sealed to the ports.

General Specification	
Port Angle:	+/-0,5°
Port Length:	+/-0.5mm
Material:	316 /316L or 304L (μ-Metal and Al Optional)
Flanges	316L
Wall Thickness:	typical. 2mm up to 100mmØ over 100mmØ:3mm

Standard-Tube Sizes	
	OD / ID
DN16	19,1 / 16,6
DN40	41,3 / 38,0
DN63	70,0 / 66,0
DN100	108 / 102
DN160	156 / 150
DN200	210 / 203

Up to DN100 seamless tube is used!

Standard Fabrication Method

Internal TIG Welding or full penetration welding (no trapped volumes allowed)

Cleaned for UHV use

He Leak rate better than:
$5*10^{-10}$ mbar l /s

Vacuum annealed at 1050°C
(Optional for smaller vessels and High Vacuum Chambers)

Standard Flange Orientation

Bolt holes straddle the vertical axis.

Please call or e-mail the Sales Office for a quotation. Allectra is happy to accept drawings in most electronic formats

Allectra offers:

-UHV Analysis Chambers – Spherical or Cylindrical,
-UHV AFM/STM Chambers
-Deposition Chambers with optional Liquid Nitrogen or Water Cooling
-Fast Entry Locks
-Thin Film Preparation Chambers
-Beam Line and Particle Accelerator Vessels
-Process Chambers
-Allectra offers a Detail Design Service with Production of Full Engineering drawings. Alternatively Allectra is happy to build from Customers own Drawings

-All Allectra UHV chambers and most fabrications are Vacuum Annealed. This process has many advantages for the customer.

- Chamber is Stress Relieved, will not change shape after baking.
- Hydrogen Outgassing is significantly reduced
- A very high standard of cleanliness is achieved both inside and outside.
- No Environmentally Unfriendly Chemicals are used in the Cleaning Process

Allectra also offers Electro-polishing as an option. However we recommend Vacuum Annealing as an alternative treatment because of its considerable advantages over Electro-Polishing

Custom Built UHV Chamber

Mu-Metal

For Ultimate Protection from Magnetic Field Effects, Allectra offers UHV Chambers constructed from Mu-Metal up to 5mm thick.
The fabrication method is to the highest industry standard and each metal to metal joint is both welded and vacuum brazed for maximum security. Mu-Metal chambers are Annealed by a special process after manufacture to restore the properties of the Mu-Metal which otherwise would be degraded by working.

Aluminum

Aluminum is fast becoming accepted as a good UHV material whose special properties are:
- Lower Bake Temperatures than stainless steel to achieve UHV (typically 150°C)
- Complete Absence of Magnetic Effects
- Good Properties in Radiation Areas – low residual radioactivity.
- Low Photon Desorption
- Light Weight
- Extruded Vacuum Chambers possible

3.1: CF Flanges

CF Copper Gasket UHV Flanges

Allectra CF Flanges offer a reliable and convenient method of making demountable connections on high vacuum and UHV systems. They are standardised throughout the vacuum industry . Allectra CF flanges can be sealed to those of other manufacturers. (Care must be taken, however, above DN250CF as there are several versions in use for larger sizes.)

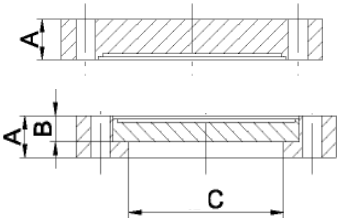
Our standard flange material is 316L (1.4404) for sizes up to DN160CF.

This material gives

- High Corrosion Resistance
- Good welding characteristics
- Very Low Magnetic Permeability (Typically. <1.005)
- Very Low Outgasssing Rates after Baking

Instead of tapped flanges, rotatable flanges, tapped rotatable and so on, we offer in addition to standard CF flanges, a new and very convenient type, the unique **ACF Allectra Universal-Flange. -See next page -**

Blind flange, fixed and rotatable



Specification

Material:	Stainless Steel. 316L up to DN160CF 304L DN200CF and above
Temperature:	to 450°C
Vacuum	10^{-12} mbar
Gaskets:	OFE Copper, Viton
Magnetic Permeability (typical)	
304L	~l,05
316L	<1,005

According to the ISO standards, flange sizes are named by a defined scale of numbers, who give the Nominal Diameter (DN) of the tube in mm. This is also the system Allectra decided to use. An alternative system is the use of the Outer Diameter OD in mm or Inch to define the flange size. The real tube diameters used depend on the manufacturer and may vary!

	Alternative name	***OD mm***	***OD INCH***	***A mm***	***B mm***	***C mm***
DN16CF		34	1.33	7,2	5	21
DN40CF	35CF / 38CF	70	2.75	13	7	48
DN63CF		114	4.5	19	12	82
DN100CF		152	6	21	14	121
DN160CF	150CF	203	8	24	15	171
DN200CF		254	10	24,5	17	208
DN250CF		305	12	26	17	258

Type	Blank Flanges	O.D.	A	B	Part Number	Euro
16CF	Fixed, 316L	34	7.2	-	411-CFB016	11.50
40CF	Fixed, 316L	70	13	-	411-CFB040	13.50
63CF	Fixed, 316L	114	19	-	411-CFB063	52.00
100CF	Fixed, 316L	152	21	-	411-CFB100	69.00
160CF	Fixed, 316L	203	24	-	411-CFB160	105.00
200CF	Fixed, 316L	254	24.5	-	411-CFB200	207.00
250CF	Fixed, 316L	305	26	-	411-CFB250	389.00

Type	Weld Flanges	O.D.	A	B	Part Number	Euro
16CF	fits tube 19mm O.D.	34	7.2		411-CF016-19	11.50
40CF	fits tube 41.3mm O.D.	70	13		412-CF040-41	13.50
63CF	fits tube 70mm O.D.	114	19		411-CF063-70	52.00
100CF	fits tube 108mm O.D.	152	21		411-CF100-108	69.00
160CF	fits tube 156mm O.D.	203	24		411-CF160-156	105.00
200CF	fits tube 209.5mm O.D.	254	24.5		411-CF200-210	207.00
250CF	fits tube 254mm O.D.	305	26		411-CF250-254	389.00

3.2: Allectra Universal CF-Flange

Allectra Universal CF Flanges

Instead of Tapped Flanges, Rotatable Flanges and Tapped Rotatable Flanges,we offer in addition to standard CF flanges, a new and very convenient type, the unique **ACF Allectra Universal-Flange.**

ACF Universal-Flange ,3 Flanges in One
The idea is simple. The outer ring of an ACF flange has equi-spaced tapped and clearance holes. This allows the **ACF Universal-Flange** to be used as a tapped flange or a non tapped flange as required.
Additionally the outer contains a locking grub screw which can be used to fix the outer ring in any required position, thereby converting the rotatable flange into a fixed flange. Because of advanced modern machining techniques Allectra is able to offer these versatile flanges at only slightly more than the cost of a conventional rotatable CF.

ACF flange, rotatable

Specification

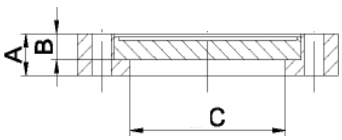
Material:	Stainless Steel. 316L
Temperature:	to 450°C
Vacuum	10^{-12} mbar
Gaskets:	OFE Copper, Viton
Magnetic Permeability (typical) 316L	<1,005

Type	UNIVERSAL FLANGES ACF	OD	A	B	C		Part Number	Euro
16CF Allectra	Universal-Flange, rotatable and fixed, with tapped and through holes	34	7.2	5	21	M4	411-ACFB016	19.00
40CF Allectra	Universal-Flange, rotatable and fixed, with tapped and through holes	70	13	7	48	M6	411-ACFB040	23.00
63CF Allectra	Universal-Flange, rotatable and fixed, with tapped and through holes	114	19	12	82	M8	411-ACFB063	83.00
63CF Allectra	DN63 CF Weld Flange, Type ALLECTRA for 70mm O. D. Tube	114	19	12	82	M8	411-ACF063-70	83.00
100CF Allectra	Universal-Flange, rotatable and fixed, with tapped and through holes	152	21	14	121	M8	411-ACFB100	121.00
100CF Allectra	DN100 CF Weld Flange , Type ALLECTRA for 108mm O. D. Tube	152	21	14	121	M8	411-ACF100-108	121.00
160CF Allectra	Universal-Flange, rotatable and fixed, with tapped and through holes	203	24	15	171	M8	411-ACFB160	186.00

	OD	*A*	*B*	*C*
16CF	34	7,2	5	21
40CF	70	13	7	48
63CF	114	19	12	82
100CF	152	21	14	121
160CF	203	24	15	171
200CF	254	24,5	17	208
250CF	305	26	17	258

All dimensions in mm

Type	ROTATABLE FLANGES Larger Sizes		A	B	C	Qty.	Part Number	Euro
200CF	Rotatable	254	24.5	17	208		411-CFB200R	286.00
200CF	rotatable/ tapped	254	24.5	17	208	M8	411-CFB200RT	327.00
250CF	Rotatable	305	26	17	258		411-CFB250R	496.00
250CF	rotatable/ tapped	305	26	17	258	M8	411-CFB250RT	547.00



Set screws for fixing the allectra Flanges are not included for shipping reasons.
Used is an M3 set screw (M2 for 16CF). Please order separately if required.
(See screw page in this Section).

3.3 CF Flanges in 316LN (1.4429) grade Stainless Steel

For applications which require the lowest possible magnetic permeability and the highest temperature stability , the stainless steel grade 316LN is recommended by laboratories such as CERN. Allectra uses 316LN for both the inner and rotatable outer parts of flanges. Up to DN63CF the material is forged bar. For sizes above DN63 , the material is forged rings.

316LN CF Flanges

Specification	
Material	316LN = 1.4429 ESR
DN63 and above: Forged Rings	
Temperature:	450°C
Vacuum	10^{-12} mbar

N.B. Rotatable Allectra 316LN Flanges have both inner and outer ring parts manufactured from 316LN

Size	Blank Flange Fixed 316LN	Ø	A	Part Number	Euro
16CF	Blank Flange Fixed , 316LN	34	7.2	411-CFB016-LN	19.50
40CF	Blank Flange Fixed , 316LN	70	13	411-CFB040-LN	26.00
63CF	Blank Flange Fixed , 316LN	114	19	411-CFB063-LN	75.00
100CF	Blank Flange Fixed , 316LN	152	21	411-CFB100-LN	114.00
160CF	Blank Flange Fixed , 316LN	203	24	411-CFB160-LN	188.00
200CF	Blank Flange Fixed , 316LN	254	24.5	411-CFB200-LN	305.00
250CF	Blank Flange Fixed , 316LN	305	26	411-CFB250-LN	588.00

Size	Weld Flange Fixed 316LN	Ø	A	Part Number	Euro
16CF	Bored for tube 19mm O.D. 316LN	34	7.2	411-CF016-19-LN	19.50
40CF	Bored for tube 41.3mmO.D. 316LN	70	13	411-CF040-41-LN	26.00
63CF	Bored for tube 70mm O.D. 316LN	114	19	411-CF063-70-LN	75.00
100CF	Bored for tube 108mm O.D. 316LN	152	21	411-CF100-108-LN	114.00
160CF	Bored for tube 156 mm O.D. 316LN	203	24	411-CF160-156-LN	188.00
200CF	Bored for tube 209.5mm O.D. 316LN	254	24.5	411-CF200-210-LN	305.00
250CF	Bored for tube 254mm O.D. 316LN	305	26	411-CF250-254-LN	588.00

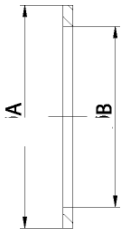
Size	Blank Flange Rotatable , 316LN	Ø	A	Part Number	Euro
16CF	Blank Flange Rotatable 316LN	34	7.2	411-CF016R-LN	24.00
40CF	Blank Flange Rotatable 316LN	70	13	411-CFB040R-LN	32.00
63CF	Blank Flange Rotatable 316LN	114	19	411-CFB063R-LN	118.00
100CF	Blank Flange Rotatable 316LN	152	21	411-CFB100R-LN	177.00
160CF	Blank Flange Rotatable 316LN	203	24	411-CFB160R-LN	290.00
200CF	Blank Flange Rotatable 316LN	254	24.5	411-CFB200R-LN	498.00
250CF	Blank Flange Rotatable 316LN	305	26	411-CFB250R-LN	815.00

Size	Weld Flange Rotatable 316LN	Ø	A	Part Number	Euro
16CF	Roatable for tube 19 mm O.D. 316LN	34	7.2	411-CF016R-19-LN	24.00
40CF	Roatable for tube 41.3 mm O.D. 316LN	70	13	411-CF040R-41-LN	32.00
63CF	Roatable for tube 70 mm O.D. 316LN	114	19	411-CF063R-70-LN	118.00
100CF	Roatable for tube 108 mm O.D. 316LN	152	21	411-CF100R-108-LN	177.00
160CF	Roatable for tube 156 mm O.D. 316LN	203	24	411-CF160R-156-LN	290.00
200CF	Roatable for tube 209.5mmO.D. 316LN	254	24.5	411-CF200R-210-LN	498.00

3.4: CF Gaskets

Oxygen Free Copper provides the best gasket material for UHV seals where baking is necessary. Repeated baking to 450° C is possible without problems. Silver plated OFE gaskets are additionally available . These are recommended for flanges which are only occasionally opened.
For viewports and other critical components , annealed gaskets are offered.
CF flanges can also be sealed with special viton gaskets for non critical applications. Viton gaskets are not suitable for repeated baking.

Gaskets
OFE Copper,
OFE Copper silver plated,
OFE Copper annealed,
OFE Copper annealed and silver plated



Specification	
Material:	Oxygen Free Copper (OFE)
Thickness:	2mm
Temperature:	450°C
Vacuum:	10^{-12} mbar

Size	Copper gaskets	A	B	Flange O.D.	Qty.	Part Number	Euro
DN16CF	OFE Copper		17	34	10	411-CG-CF016-10	16.00
DN16CF	OFE Copper,annealed,			34	5	411-CG-CF016-A-5	13.00
DN16CF	OFE Copper Silver Plated			34	5	411-CG-CF016-SP-5	9.00
DN40CF	OFE Copper		41	70	10	411-CG-CF040-10	17.00
DN40CF	OFE Copper,annealed,			70	5	411-CG-CF040-A-5	20.00
DN40CF	OFE Copper Annealed & Silver Plated			70	5	411-CG-CF040-ASP5	22.00
DN40CF	OFE Copper Silver Plated			70	5	411-CG-CF040-SP-5	13.00
DN63CF	OFE Copper		67	114	10	411-CG-CF063-10	31.00
DN63CF	OFE Copper,annealed,			114	5	411-CG-CF063-A-5	25.00
DN63CF	OFE Copper Silver Plated			114	5	411-CG-CF063-SP-5	16.00
DN100CF	OFE Copper			152	10	411-CG-CF100-10	50.00
DN100CF	OFE Copper,annealed,			152	5	411-CG-CF100-A-5	34.00
DN100CF	OFE Copper Silver Plated			152	5	411-CG-CF100-SP-5	22.00
DN160CF	OFE Copper			203	5	411-CG-CF160-5	30.00
DN160CF	OFE Copper,annealed,			203	5	411-CG-CF160-A-5	38.00
DN160CF	OFE Copper Silver Plated			203	5	411-CG-CF160-SP-5	30.00
DN200CF	OFE Copper			250	5	411-CG-CF200-5	41.00
DN200CF	OFE Copper Silver Plated			250	5	411-CG-CF200-SP-5	51.00
DN250CF	OFE Copper			304	5	411-CG-CF250-5	180.00
DN250CF	OFE Copper Silver Plated			304	5	411-CG-CF250-SP-5	191.00

All sizes can be offered as:
- Blank Copper Discs
- Silver Plated
- Annealed
- Annealed and Silver Plated

Viton Gaskets

We offer Flat gaskets, for sealing CF type flanges.

Specification:	
Material:	Viton
Thickness:	2/ 3mm
Temperature:	max. 150°C
Vacuum:	ca. 10^{-9} mbar

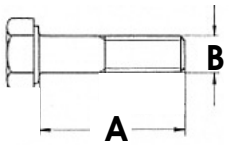
	VITON GASKETS	A	B	Flange O.D.	Qty.	Part Number	Euro
DN16CF	Viton Gaskets – Flat design			34	2	411-VG-CF016-2	16.50
DN40CF	Viton Gaskets – Flat design			70	2	411-VG-CF040-2	15.00
DN63CF	Viton Gaskets – Flat design			114	2	411-VG-CF063-2	57.00
DN100CF	Viton Gaskets – Flat design			152	2	411-VG-CF100-2	61.00
DN160CF	Viton Gaskets – Flat design			203	2	411-VG-CF160-2	75.00

3.5: Bolts, Nuts, Washers

Stainless Steel bolts are the standard for connecting CF flanges. To avoid stress, the bolts have to be tightened in a criss-cross star pattern. The tightening must be done gradually in approx. ½ turn increments until the desired torque is achieved.
Allectra offers bolt sets, which contain bolts, nuts and washers in quantity of 25 off each. The sets for tapped flanges contain bolts and washers only.

Anti-seize thread lubricants are recommended to avoid galling, which can occur even at room temperature.

Bolt sets



Our standard bolts for DN16CF flanges are Cap Head types, as they are more convenient to use.
All other sizes come with hex head.
(Cap head available on request)

Recommended Length of Screws

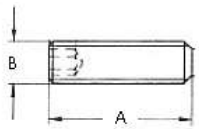
Flange Size	Thread metric	Hole Ø mm	Nr of screws	Length for through holes (mm)	Length for tapped holes (mm)	Length for double sided flanges (mm)
16CF	M4	4.4	6	20	16	30
40CF	M6	6.7	6	35	25	55
63CF	M8	8.4	8	50	30	65
100CF	M8	8.4	16	50	35	70
160CF	M8	8.4	20	60	35	80
200CF	M8	8.4	24	60	50	90
250CF	M8	9.9	32	60	50	100

All dimensions in mm

Bolt Sets

Material Stainless Steel

Sets consists of 25 bolts, washers and Nuts (not included in sets for tapped flanges)



Studs

Thread over full length
One end with slit (M4)
or Socket Set Screw
(M6 / M8)

Studs can be used to join flanges when space is limited. The slit on one end makes it more convenient to insert / remove the stud in threaded flanges.

	Bolt sets	A	B	Qty	Part Code	Euro
16CF	Bolt set M4x16, with washers, cap head, SS (for tapped flanges)	16	M4	25	411-M4x16SET	11.00
	Bolt set M4x20, with nuts and washers, cap head, SS	20	M4	25	411-M4x20SET	12.00
	Bolt set M4x30, with nuts and washers, cap head, SS	30	M4	25	411-M4x30SET	12.00
40CF	Bolt set M6x25, with washers, (for tapped flanges)	25	M6	25	411-M6x25SET	12.00
	Bolt set M6x35, with nuts and washers	35	M6	25	411-M6x35SET	11.00
	Bolt set M6x55, with nuts and washers	55	M6	25	411-M6x55SET	24.00
63-250CF	Bolt set M8x30, with washers, (for tapped flanges)	30	M8	25	411-M8x30SET	19.00
	Bolt set M8x35, with washers, (for tapped flanges)	35	M8	25	411-M8x35SET	19.00
	Bolt set M8x50, with nuts and washers	50	M8	25	411-M8x50SET	24.00
	Bolt set M8x65, with nuts and washers	65	M8	25	411-M8x65SET	39.00
	Bolt set M8x70, with nuts and washers	70	M8	25	411-M8x70SET	34.00
	Bolt set M8x80, with nuts and washers	80	M8	25	411-M8x80SET	40.00
Studs	Studs with slit	25	M4	10	411-M4-STUD-25	7.00
	Studs for Allen Key	40	M6	10	411-M6-STUD-40	10.00
	Studs for Allen Key	60	M8	10	411-M8-STUD-60	21.00

Set Screws

These M2 / M3 set screws can be used for fixing the Allectra Universal Flanges ACF in any position. Use thread lubricant to avoid galling.

	Set screws for ACF Flanges	A	B	Qty	Part Code	Euro
16CF	Set screw with slit M2x3, SS (for allectra universal flanges ACF16)	3	M2	10	411-M2x3	5.00
40-160CF	Set screw M3x6, SS (for allectra universal flanges ACF40 and bigger)	6	M3	10	411-M3x6	5.00

3.6: CF Flange Adaptors , Double Sided Flanges

Zero Length Adaptors are the most convenient way of mating different flange sizes when space is limited.

Double Sided Flanges can be inserted between standard CF flanges and are useful for making special fittings such as gas inlets. Allectra can offer custom made fittings of this sort on request.

The material is 316L= 1.4404.

All flanges are available in 316LN (1.4429) on request.

Flange Adaptor

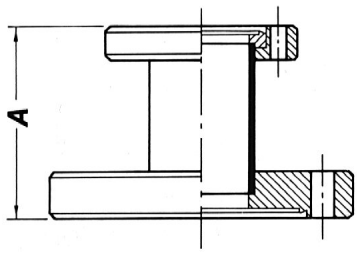
CF	Flange Adaptor Zero length	Qty.	Part Number	Euro
40-16	Flange Adaptor DN40CF- 16CF, M4 tapped	1	412-CFZ040-016	42.00
63-40	Flange Adaptor , DN63CF- 40CF, M6 tapped	1	412-CFZ063-040	94.00
100-40	Flange Adaptor , DN100CF- 40CF, M6 tapped	1	412-CFZ100-040	108.00
100-63	Flange Adaptor , DN100CF- 63CF, M8 tapped	1	412-CFZ100-063	132.00
160-40	Flange Adaptor , DN160CF- 40CF, M6 tapped	1	412-CFZ160-040	154.00
160-63	Flange Adaptor , DN160CF- 63CF, M8 tapped	1	412-CFZ160-063	168.00
160-100	Flange Adaptor , DN160CF- 100CF, M8 tapped	1	412-CFZ160-100	184.00
200-63	Flange Adaptor , DN200CF- 63CF, M8 tapped	1	412-CFZ200-063	274.00
200-100	Flange Adaptor , DN200CF- 100CF, M8 tapped	1	412-CFZ200-100	312.00
200-160	Flange Adaptor , DN200CF-1600CF, M8 tapped	1	412-CFZ200-160	331.00

Double Sided Flange

As well as the weld flanges shown opposite , Allectra can deliver blank double sided flanges on request.

CFD	Double Sided Flange	Bore	Part Number	Euro
16CF	DN16 CF Double Sided Flange, 7,6mm thick	16	412-CFD016	23.00
40CF	DN40 CF Double Sided Flange, 12,7mm thick	37	412-CFD040	34.00
63CF	DN63 CF Double Sided Flange, 17,4mm thick	64	412-CFD063	94.00
100CF	DN100 CF Double Sided Flange, 20mm thick	102	412-CFD0100	119.00
160CF	DN160 CF Double Sided Flange , 22mm thick	153	412-CFD160	166.00
200CF	DN200 CF Double Sided Flange, 24,5mm thick	200	412-CFD200	284.00

Flange Adaptor with Tube



CF	Flange Adaptor with Tube	A	Part Number	Euro
40-16	Flange Adaptor, DN40CF- 16CF	45	412-CF040-016	64.00
63-40	Flange Adaptor, DN63CF- 40CF	75	412-CF063-040	110.00
100-63	Flange Adaptor, DN100CF- 63CF	95	412-CF100-063	165.00
160-100	Flange Adaptor, DN160CF- 100CF	105	412-CF160-100	287.00
200-160	Flange Adaptor, DN200CF- 160CF	115	412-CF200-160	428.00

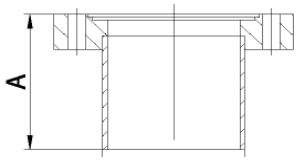
The smaller flange is rotatable.

3.7: CF Flange with Tube , Straight Connectors and Elbows

Material is 316L= 1.4404. **All Fittings can be delivered in 316LN (1.4429) if required.**

All Fittings are available with other dimensions for a small extra charge on request.

Flange with Tube

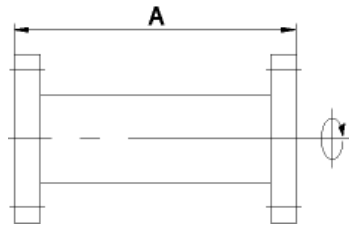


CF flange is fixed.

	Flange with Tube	A	Part Number	Euro
16CF	Flange with Tube 38mm long	38	413-CFT016	25.00
40CF	Flange with Tube 63mm long	63	413-CFT040	31.00
63CF	Flange with Tube 105mm long	105	413-CFT063	81.00
100CF	Flange with Tube 135mm long	135	413-CFT100	119.00
160CF	Flange with Tube 167mm long	167	413-CFT160	179.00
200CF	Flange with Tube 203mm long	203	413-CFT200	324.00

	Allectra Universal Flange with Tube	A	Part Number	Euro
16CF	Universal Flange with Tube 38mm long	38	413-ACFT016	34.00
40CF	Universal Flange with Tube 63mm long	63	413-ACFT040	46.00
63CF	Universal Flange with Tube 105mm long	105	413-ACFT063	117.00
100CF	Universal Flange with Tube 135mm long	135	413-ACFT100	174.00
160CF	Universal Flange with Tube 167mm long	167	413-ACFT160	281.00
200CF	Universal Flange with Tube 203mm long	203	413-ACFT200	POA

Straight Connector



Special lengths on request.

One fixed flange , the other end rotatable.

	Fixed	A	Part Number	Euro
16CF	Straight Connector	76	413-CFX2-016-076	54.00
40CF	Straight Connector	126	413-CFX2-040-126	66.00
63CF	Straight Connector	210	413-CFX2-063-210	179.00
100CF	Straight Connector	270	413-CFX2-100-270	266.00
160CF	Straight Connector	334	413-CFX2-160-334	418.00
200CF	Straight Connector	406	413-CFX2-200-406	722.00

90° Elbow

One CF flange is fixed the other is rotatable.

	90° Elbow , 1 Flange Rotatable , 1 Fixed	A	Part Number	Euro
16CF	90° Elbow	38	413-CFBOW90-16	63.00
40CF	90° Elbow	63	413-CFBOW90-40	72.00
63CF	90° Elbow	105	413-CFBOW90-63	210.00
100CF	90° Elbow	135	413-CFBOW90-100	307.00
160CF	90° Elbow	167	413-CFBOW90-160	490.00
200CF	90° Elbow	203	413-CFBOW90-200	809.00

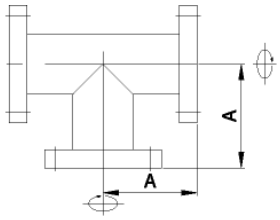
Special length fittings available to order. Please call sales office.

Fittings with mixed flange types and specials -Please call sales office

3.8: CF T-Pieces, 4 and 6 Way Crosses

Material is 316L= 1.4404.
All Fittings can be made with 316LN flanges and 316L Tube.

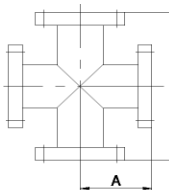
T-Piece



2 Flanges Rotatable

	Tee Piece	A	B	Part Number	Euro
DN16CF	Tee Piece	38	-	413-CFX3-016	96.00
DN40CF	Tee Piece	63	-	413-CFX3-040	115.00
DN63CF	Tee Piece	105	-	413-CFX3-063	290.00
DN100CF	Tee Piece	135	-	413-CFX3-100	417.00
DN160CF	Tee Piece	167	-	413-CFX3-160	710.00
DN200CF	Tee Piece	203	-	413-CFX3-200	1160.00

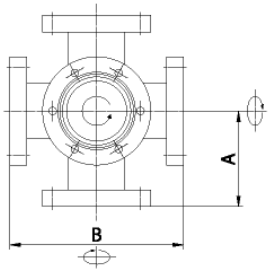
4-Way Cross



2 Flanges Rotatable

	4-Way Cross	A	B	Part Number	Euro
DN16CF	4-Way Cross	38	-	413-CFX4-016	127.00
DN40CF	4-Way Cross	63	-	413-CFX4-040	166.00
DN63CF	4-Way Cross	105	-	413-CFX4-063	425.00
DN100CF	4-Way Cross	135	-	413-CFX4-100	649.00
DN160CF	4-Way Cross	167	-	413-CFX4-160	998.00
DN200CF	4-Way Cross	203	-	413-CFX4-200	1597.00

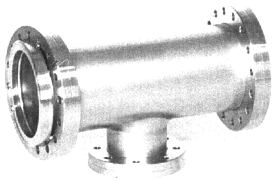
6-Way Cross



3 Flanges Rotatable

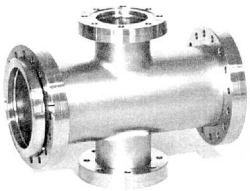
	6- Way Cross	A	B	Part Number	Euro
DN16CF	6- Way Cross	38	76	413-CFX6-016	195.00
DN40CF	6- Way Cross	63	126	413-CFX6-040	259.00
DN63CF	6- Way Cross	105	210	413-CFX6-063	640.00
DN100CF	6- Way Cross	135	270	413-CFX6-100	955.00
DN160CF	6- Way Cross	167	334	413-CFX6-160	1490.00
DN200CF	6- Way Cross	203	406	413-CFX6-200	2425.00

Reducing Tee Piece



	Reducing TeePiece	A	B	Part Number	Euro
DN40-16CF	Reducing Tee Piece	126	50	413-CFX3-40-16	122.00
DN63-40CF	Reducing Tee Piece	210	75	413-CFX3-63-40	257.00
DN100-63CF	Reducing Tee Piece	270	100	413-CFX3-100-63	429.00
DN160-100CF	Reducing Tee Piece	334	125	413-CFX3-160-100	613.00
DN200-160CF	Reducing Tee Piece	406	150	413-CFX3-200-160	1015.00

Reducing Cross



	Reducing 4 Way Cross	A	B	Part Number	Euro
DN40-16CF	Reducing 4 Way Cross	126	50	413-CFX4-40-16	158.00
DN63-40CF	Reducing 4 Way Cross	210	75	413-CFX4-63-40	315.00
DN100-63CF	Reducing 4 Way Cross	270	100	413-CFX4-100-63	560.00
DN160-100CF	Reducing 4 Way Cross	334	125	413-CFX4-160-100	919.00
DN200-160CF	Reducing 4 Way Cross	406	150	413-CFX4-200-160	1348.00

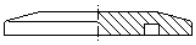
For Reducing Fittings , A is the length of the main axis and B is the corresponding port length of the smaller flange port measured form the central axis of the fitting.

3.09: KF Flanges , Clamps and Gaskets

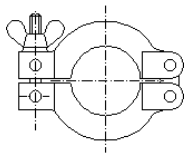
Allectra offers the complete range of standard KF construction components as well as custom built parts , Blank Flanges and T-Pieces , Crosses, Tees and Special Components. All Allectra KF Components are manufactured from high grade stainless steel or Aluminum.
The outer diameters of flanges sizes KF10 and KF16 are identical, as are KF20 / KF25 and KF32 / KF40. In our standard programme only the larger tube sizes are offered, that is DN16, DN25 and DN40. The other sizes are available to order if required.

KF Construction Components

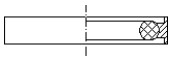
Blank Flange



Clamp, Standard and Hinged



Centering Rings and
Trapped Centering Rings



Trapped Centering Rings are more convenient to install and will also fit to the smaller versions DN10 / DN20 / DN32. No special adaptor centering rings are required, the full tube ID is free!

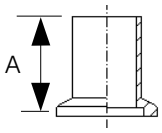
	KF 16	A	Qty.	Part Number	Euro
DN16KF	Blank Flange 16KF, Stainless Steel		1	431-KF16-B	5.50
DN16KF	Blank Flange 16KF, Aluminum		1	431-KF16-B-AL	5.00
DN16KF	Clamp for Flange KF16 / KF10, Aluminum		1	431-KF16-C	7.00
DN16KF	Hinged Clamp for Flange KF16 / KF10, Aluminum		1	431-KF16-C-FAST	9.00
DN16KF	Protective Cap for Flange KF16 / KF10, PVC		1	431-KF16-CAP	0.50
DN16KF	16KF Centering Ring Aluminum includes Viton O-Ring		1	431-KF16-CR-AV	4.50
DN16KF	16KF/KF10 Trapped Centering Ring Aluminum includes Viton O-Ring		1	431-KF16-CR-OUTER	10.00
DN16KF	KF16 Replacement O-Ring, Viton		1	431-KF16-O	3.00
	KF 25	A	Qty.	Part Number	Euro
DN25KF	Blank Flange 25KF, Stainless Steel		1	431-KF25-B	6.50
DN25KF	Blank Flange 25KF, Aluminum		1	431-KF25-B-AL	5.00
DN25KF	Clamp for Flange KF25 / KF20, Aluminum		1	431-KF25-C	9.00
DN25KF	Hinged Clamp for Flange KF25/ KF20, Aluminum		1	431-KF25-C-FAST	11.00
DN25KF	Protective Cap for Flange KF25 / KF20, PVC		1	431-KF25-CAP	0.50
DN25KF	25KF Centering Ring Aluminum includes Viton O-Ring		1	431-KF25-CR-AV	6.00
DN25KF	25KF/KF20 Trapped Centering Ring Aluminum includes Viton O-Ring		1	431-KF25-CR-OUTER	11.00
DN25KF	KF25 Replacement O-Ring, Viton		1	431-KF25-O	3.50
	KF 40	A	Qty.	Part Number	Euro
DN40KF	Blank Flange 40KF, Stainless Steel		1	431-KF40-B	8.00
DN40KF	Blank Flange 40KF, Aluminum		1	431-KF40-B-AL	6.50
DN40KF	Clamp for Flange KF40 / KF32, Aluminum		1	431-KF40-C	10.50
DN40KF	Hinged Clamp for Flange KF40/ KF32, Aluminum		1	431-KF40-C-FAST	13.00
DN40KF	Protective Cap for Flange KF40 / KF32, PVC		1	431-KF40-CAP	0.75
DN40KF	40KF Centering Ring Aluminum includes Viton O-Ring		1	431-KF40-CR-AV	8.00
DN40KF	40KF/KF32 Trapped Centering Ring Aluminum includes Viton O-Ring		1	431-KF40-CR-OUTER	14.50
DN40KF	KF40 Replacement O-Ring, Viton		1	431-KF40-O	4.80
	KF 50	A	Qty.	Part Number	Euro
DN50KF	Blank Flange 50KF, Stainless Steel		1	431-KF50-B	16.50
DN50KF	Blank Flange 50KF, Aluminum		1	431-KF50-B-AL	11.00
DN50KF	Clamp for Flange KF50, Aluminum		1	431-KF50-C	13.50
DN50KF	Protective Cap for Flange KF50, PVC		1	431-KF50-CAP	1.50
DN50KF	50KF Centering Ring Aluminum includes Viton O-Ring		1	431-KF50-CR-AV	12.00
DN50KF	50KF Trapped Centering Ring Aluminum includes Viton O-Ring		1	431-KF50-CR-OUTER	16.00
DN50KF	KF50 Replacement O-Ring, Viton		1	431-KF50-O	5.10

3.10: KF Fittings

- Flanged Tubes
- Elbows 90°
- Straight Connectors
- Tee-Pieces

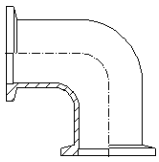
Versions in Stainless Steel and Aluminium

Flanged Tubes



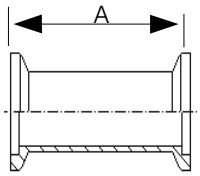
Size	KF Flanged Tubes , Stainless Steel	A	B	Qty.	Part Number	Euro
10KF	Flanged Tube DN10KF, Stainless Steel, 30mm long	30		1	433-KF10-TS	9.00
16KF	Flanged Tube DN16KF, Stainless Steel, 70mm long	70		1	433-KF16-T	14.00
16KF	Flanged Tube DN16KF, Stainless Steel, 30mm long	30		1	433-KF16-TS	9.00
25KF	Flanged Tube DN25KF, Stainless Steel, 70mm long	70		1	433-KF25-T	16.00
25KF	Flanged Tube DN25KF, Stainless Steel, 30mm long	30		1	433-KF25-TS	12.00
40KF	Flanged Tube DN40KF, Stainless Steel, 70mm long	70		1	433-KF40-T	19.00
40KF	Flanged Tube DN40KF, Stainless Steel, 30mm long	30		1	433-KF40-TS	13.00
50KF	Flanged Tube DN50KF, Stainless Steel, 70mm long	70		1	433-KF50-T	30.00
50KF	Flanged Tube DN50KF, Stainless Steel, 30mm long	30		1	433-KF50-TS	22.00

Elbows 90°



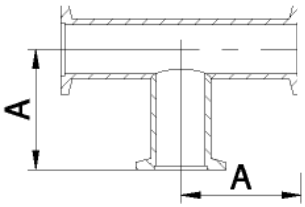
Size	90° Elbow, Stainless Steel and Aluminium	A	B	Qty.	Part Number	Euro
10KF	DN10KF 90° Elbow, Stainless Steel	30		1	433-KFL-10	38.00
16KF	DN16KF 90° Elbow, Stainless Steel	40		1	433-KFL-16	38.00
16KF	DN16KF 90° Elbow, Aluminum	40		1	433-KFL-16-AL	27.00
25KF	DN16KF 90° Elbow, Stainless Steel	50		1	433-KFL-25	41.00
25KF	DN25KF 90° Elbow, Aluminum	50		1	433-KFL-25-AL	35.00
40KF	DN16KF 90° Elbow, Stainless Steel	65		1	433-KFL-40	64.00
40KF	DN40KF 90° Elbow, Aluminum	65		1	433-KFL-40-AL	39.00
50KF	DN16KF 90° Elbow, Stainless Steel	70		1	433-KFL-50	78.00

Straight Connectors



Size	KF-Straight Connectors Stainless Steel and Aluminium	A	B	Qty.	Part Number	Euro
10KF	10KF Straight Connector, Stainless Steel	60		1	433-KFX2-10	35.00
16KF	16KF Straight Connector, Stainless Steel	80		1	433-KFX2-16	33.00
16KF	16KF Straight Connector, Aluminum	80		1	433-KFX2-16-AL	22.00
25KF	25KF Straight Connector, Stainless Steel	100		1	433-KFX2-25	38.00
25KF	25KF Straight Connector, Aluminum	100		1	433-KFX2-25-AL	26.00
40KF	40KF Straight Connector, Stainless Steel	130		1	433-KFX2-40	45.00
40KF	40KF Straight Connector, Aluminum	120		1	433-KFX2-40-AL	37.00
50KF	50KF Straight Connector, Stainless Steel	140		1	433-KFX2-50	60.00

Tee-Pieces

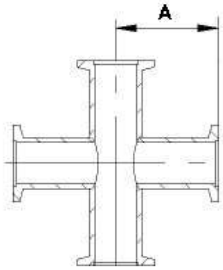


	KF Tee-piece Stainless Steel and Aluminium	A	B	Qty.	Part Number	Euro
10KF	DN10KF Tee-piece, Stainless Steel	30		1	433-KFX3-10	48.00
16KF	DN16KF Tee-piece, Stainless Steel	40		1	433-KFX3-16	49.00
16KF	DN16KF Tee-piece, Aluminum	40		1	433-KFX3-16-AL	31.00
25KF	DN25KF Tee-piece, Stainless Steel,	50		1	433-KFX3-25	61.00
25KF	DN25KF Tee-piece, Aluminum	50		1	433-KFX3-25-AL	36.00
40KF	DN40KF Tee-piece, Stainless Steel,	65		1	433-KFX3-40	71.00
40KF	DN40KF Tee-piece, Aluminum	65		1	433-KFX3-40-AL	49.00
50KF	DN50KF Tee-piece, Stainless Steel,	70		1	433-KFX3-50	134.00

3.11: KF Fittings

- 4-Way Cross, , 6-Way Cross
- Reducer, Reducing Tee Piece
- Hose Connector

4-Way / 6-Way Cross



KF	4 Way Cross	A	B	Part Number	Euro
KF10	10KF 4-Way Cross , Stainless Steel	30	30	433-KFX4-10	70.00
KF10	10KF 4-Way Cross , Aluminium	40	20	433-KFX4-10-AL	35.00
KF16	16KF 4-Way Cross , Stainless Steel	40	40	433-KFX4-16	84.00
KF16	16KF 4-Way Cross , Aluminium	40	20	433-KFX4-16-AL	41.00
KF25	25KF 4-Way Cross , Stainless Steel	50	50	433-KFX4-25	95.00
KF25	25KF 4-Way Cross , Aluminium	50	22	433-KFX4-25-AL	48.00
KF40	40KF 4-Way Cross , Stainless Steel	65	65	433-KFX4-40	119.00
KF40	40KF 4-Way Cross , Aluminium	60	35	433-KFX4-10-AL	69.00
KF50	50KF 4-Way Cross , Stainless Steel	70	70	433-KFX4-50	158.00

Aluminium-Versions are asymmetric.
A=Port Length
B= Shorter Port Length for asymmetric fittings

KF	6 -Way Cross	A	B	Part Number	Euro
KF10	10KF 6-Way Cross Stainless Steel	40	40	433-KFX6-10	118.00
KF16	16KF 6-Way Cross Stainless Steel	40	40	433-KFX6-16	120.00
KF25	25KF 6-Way Cross Stainless Steel	50	50	433-KFX6-25	147.00
KF40	40KF 6-Way Cross Stainless Steel	65	65	433-KFX6-40	190.00
KF50	50KF 6-Way Cross Stainless Steel	70	70	433-KFX6-50	256.00

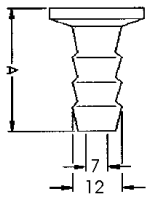
KF-KF Reducing Pieces

KF	Reducing KF Tee Piece	A	B	Part Number	Euro
KF25-16	Reducing KF Tee Piece	50	40	433-KFX3-25-16	68.00
KF40-16	Reducing KF Tee Piece	65	40	433-KFX3-40-16	90.00
KF40-25	Reducing KF Tee Piece	65	50	433-KFX3-40-25	90.00
KF50-25	Reducing KF Tee Piece	70	50	433-KFX3-50-25	104.00
KF50-40	Reducing KF Tee Piece	70	65	433-KFX3-50-40	120.00

	Reducing Piece KF-KF	A	B	Part Number	Euro
KF25-16	Reducing Piece , Stainless Steel	40		433-K25-16	22.00
KF25-16	Reducing Piece , Aluminium	40		433-K25-16-AL	16.00
KF40-16	Reducing Piece , Stainless Steel	40		433-K40-16	29.00
KF40-16	Reducing Piece , Aluminium	40		433-K40-16-AL	25.00
KF40-25	Reducing Piece , Stainless Steel	40		433-K40-25	31.00
KF40-25	Reducing Piece , Aluminium	40		433-K40-25-AL	26.00
KF50-25	Reducing Piece , Stainless Steel	40		433-K50-25	44.00
KF50-25	Reducing Piece , Aluminium	40		433-K50-25-AL	29.00
KF50-40	Reducing Piece , Stainless Steel	40		433-K50-40	52.00
KF50-40	Reducing Piece , Aluminium	40		433-K50-40-AL	32.00

Adaptors from CF to KF are shown on page 54

Hose Connector



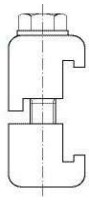
	KF Hose Connector	A	B	Part Number	Euro
KF16	DN16KF Stainless Steel Connector for Hose ca. 12mm ID	40		434-K16-HOSE12	15.00
KF16	DN16KF Aluminium Connector for Hose ca. 12mm ID	40		434-K16-HOSE12-AL	12.00
KF25	DN25KF Aluminium Connector for Hose ca. 12mm ID	40		434-K25-HOSE12-AL	14.00

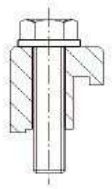
3.12: ISO-K Construction Components (LF Types)

All tube sizes from 63mm I.D. up to 630 I.D. can be fitted with flanges according to ISO 1609. They may be vacuum sealed with an elastomer O Ring and can be reliably used at pressures down to 10^{-8} mbar. If Viton gaskets are used, ISO components can be subjected to constant temperatures up to 150°C and brief exposure up to 200°C.
ISO flanges can be joined together by one of two methods. Either Double Clamps can be used to join two clamp flanges or bolts and nuts if the flanges are bolt type. Both type use the same O Ring carrier and can be mounted together using an ISO Bolt Ring Adapter. Single Clamps can be used with valves or other components which have tapped flanges.
ISO-K Series are identical with ISO-LF Large Flange Types

Single and Double Clamps

	No of Clamps	
ISO-K 63	4	M 8 *)
ISO-K 100	4	M 8 *)
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





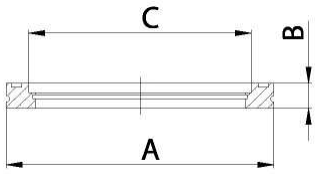
ISO-K 500	12	M12
ISO-K 630	12	M12

*) valid for Single Claw Clamp

Double Clamp Single Clamp

N.B. The clamps 441-DCC-063-250-S: fit al sizes from ISO-K 63 to ISO-K 250 and are only slightly more expensive than the Aluminum versions!

ISO-K (LF) Flange



Size	Double Claw Clamps	A	B	Qty.	Part Number	Euro
DN63/100LF	Double Claw Clamp for ISO-K 63-100, Aluminium			1	441-DCC-063-100-ALU	5.50
DN63/250LF	for ISO-K 63 - 250, Galvanised Steel			1	441-DCC-063-250-S	6.00
DN63/250LF	for ISO-K 63-250, Stainless Steel			1	441-DCC-063-250-SS	9.00
DN63/250LF	Double Claw Clamp for ISO-K 160-250, Aluminium			1	441-DCC-160-250-ALU	6.00
DN320/500LF	Double Claw Clamp for ISO-K 320-500, Galv. Steel			1	441-DCC-320-500-S	10.00

Size	Single Claw Clamps	A	B	Qty.	Part Number	Euro
DN63/100LF	Single Claw Clamps for ISO-K 63-100, Aluminium			1	441-SCC-063-100-ALU	5.50
DN63/100LF	Single Claw Clamps for ISO-K 63-100, Galv. Steel			1	441-SCC-063-100-S	7.00
DN63/100LF	Single Claw Clamps for ISO-K 63-100, Stainless Steel, M8			1	441-SCC-063-100-SS	8.00
DN160/250LF	Single Claw Clamps for ISO-K 160-250, Al, M10			1	441-SCC-160-250-ALU	6.00
DN160/250LF	for ISO-K 160-250, Galvanised Steel			1	441-SCC-160-250-S	8.00
DN160/250LF	for ISO-K 160-250, Stainless Steel, M10			1	441-SCC-160-250-SS	9.00
DN320/500LF	for ISO-K 320-500, Galvanised Steel			1	441-SCC-320-500-S	18.00

Size	ISO-K (LF) Flanges DN63LF and Accessories	A	B	C	Part Number	Euro
DN63LF	Blank Flange ,Clamp Type, Stainless Steel	95	12	-	441-ISO063-B	45.00
DN63LF	Weld Flange, ISO-K 63 (Clamp Type)	95	12	76	441-ISO063-W	36.00
DN63LF	O Ring, Viton Ring with Al Centre Ring				441-ISO063-O-VA	19.00
DN63LF	O Ring, Viton Ring with Stainless Steel Centre Ring				441-ISO063-O-VS	25.00
DN63LF	Viton O-Ring, Diameter 5mm				441-ISO063-O	7.00

	ISO-K (LF) Flanges DN100LF and Accessories	A	B	C	Part Number	Euro
DN100LF	Blank Flange ,Clamp Type, Stainless Steel,	130	12	-	441-ISO100-B	56.00
DN100LF	Weld Flange, ISO-K 100 (Clamp Type), Stainless Steel, for Tube 108mm	130	12	108	441-ISO100-W	47.00
DN100LF	O Ring, Viton Ring with Al Centre Ring				441-ISO100-O-VA	26.00
DN100LF	O Ring, Viton Ring with Stainless Steel Centre Ring				441-ISO100-O-VS	38.00
DN100LF	Viton O-Ring, Diameter 5mm				441-ISO100-O	11.00

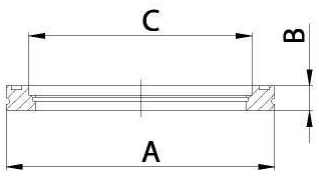
	ISO-K (LF) Flanges DN160LF and Accessories	A	B	C	Part Number	Euro
DN160LF	Blank Flange Clamp Type, Stainless Steel,	180	12	-	441-ISO160-B	81.00
DN160LF	Weld Flange, ISO-K 160 (Clamp Type), Stainless Steel, for Tube 108mm	130	12	108	441-ISO160-W	79.00
DN160LF	O Ring, Viton Ring with Al Centre Ring				441-ISO160-O-VA	29.00
DN160LF	O Ring, Viton Ring with Stainless Steel Centre Ring				441-ISO160-O-VS	44.00
DN160LF	Viton O-Ring, Diameter 5mm				441-ISO160-O	16.00

For ISO Bolt Flanges , please call sales office.

3.13: ISO-K (LF) Flanges and Accessories DN200 ISO-K to DN630 ISO-K

- Blank Flanges
- Gaskets and Centering Rings
- Weld Flanges

Dimensions



	ISO-K 200 (LF200) , Flanges	A	B	C	Einh.	Part Number	Euro
200	Blank Flange , Stainless Steel	240	12	-	1	441-ISO200-B	149.00
200	Weld Flange ,Stainless Steel for tube O.D. 219mm	240	12	219	1	441-ISO200-W	118.00
200	Viton O Ring with Al Centering Ring				1	441-ISO200-O-AV	48.00
200	Viton O Ring with Stainless Steel Centering Ring				1	441-ISO200-O-SV	64.00
200	Viiton O-Ring,Diameter 5mm				1	441-ISO200-O	24.00

	ISO-K 250	A	B	C	Qty.	Part Number	Euro
250	Blank Flange , Stainless Steel	290	12	-	1	441-ISO250-B	197.00
250	Weld Flange ,Stainless Steel for tube O.D. 273mm	290	12	273	1	441-ISO250-W	139.00
250	Viton O Ring with Al Centering Ring				1	441-ISO250-O-AV	54.00
250	Viton O Ring with Stainless Steel Centering Ring				1	441-ISO250-O-SV	78.00
250	Viiton O-Ring,Diameter 5mm				1	441-ISO250-O	29.00

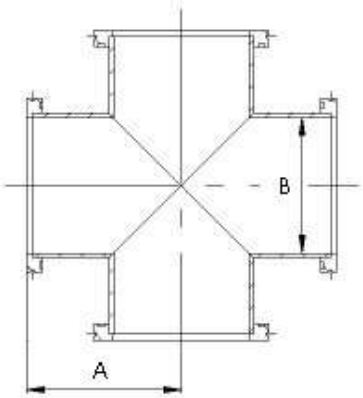
	ISO-K 320	A	B	C	Qty.	Part Number	Euro
320	Blank Flange , Stainless Steel	370	17	-	1	441-ISO320-B	318.00
320	Weld Flange ,Stainless Steel for tube O.D. 323mm	370	17	323	1	441-ISO320-W	309.00
320	Viton O Ring with Al Centering Ring				1	441-ISO320-O-AV	98.00
320	Viton O Ring with Stainless Steel Centering Ring				1	441-ISO320-O-SV	120.00
320	Viiton O-Ring,Diameter 5mm				1	441-ISO320-O	38.00

	ISO-K 400	A	B	C	Qty.	Part Number	Euro
400	Blank Flange , Stainless Steel	450	17	-	1	441-ISO400-B	468.00
400	Weld Flange ,Stainless Steel for tube O.D. 406mm	450	17	407	1	441-ISO400-W	430.00
400	Viton O Ring with Al Centering Ring				1	441-ISO400-O-AV	128.00
400	Viton O Ring with Stainless Steel Centering Ring				1	441-ISO400-O-SV	154.00
400	Viiton O-Ring,Diameter 5mm				1	441-ISO400-O	49.00

	ISO-K 500	A	B	C	Qty.	Part Number	Euro
500	Blank Flange , Stainless Steel	550	17	-	1	441-ISO500-B	656.00
500	Weld Flange ,Stainless Steel for tube O.D. 508mm	550	17	509	1	441-ISO500-W	628.00
500	Viton O Ring with Al Centering Ring				1	441-ISO500-O-AV	158.00
500	Viton O Ring with Stainless Steel Centering Ring				1	441-ISO500-O-SV	197.00
500	Viiton O-Ring,Diameter 5mm				1	441-ISO500-O	69.00

	ISO-K 630	A	B	C	Qty.	Part Number	Euro
630	Blank Flange , Stainless Steel	690	22	-	1	441-ISO630-B	POA
630	Weld Flange ,Stainless Steel for tube O.D. 660mm	690	22	661	1	441-ISO630-W	POA
630	Viton O Ring with Al Centering Ring				1	441-ISO630-O-AV	228.00
630	Viton O Ring with Stainless Steel Centering Ring				1	441-ISO630-O-SV	278.00
630	Viiton O-Ring,Diameter 5mm				1	441-ISO630-O	POA

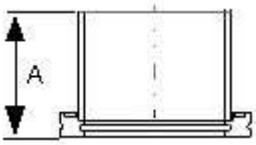
3.14: ISO-K (LF) Fittings



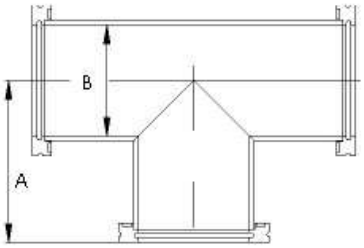
- Flange with Tube
- Straight Connectors
- Tee-Pieces ,4 Way Crosses
- 5- and 6-Way Crosses available on request
- Elbows 90°
- Reducing Crosses and Conical Reducers also available

Specification	
Material:	Stainless Steel
Wall Thickness:	3mm (typical)
Vacuum:	to 10^{-8} mbar

Flange with Tube



Tee Piece



Size	Flange with Tube	A	B	Part Number	Euro
63	Flange with Tube ISO-K 63, Stainless Steel, Tube O.D. 76mm	100	70	443-ISO063-TU	69.00
100	Flange with Tube ISO-K 100, Stainless Steel, Tube O.D. 108mm	100	102	443-ISO100-TU	85.00
160	Flange with Tube ISO-K 160, Stainless Steel, Tube O.D. 159mm	100	153	443-ISO160-TU	124.00
200	Flange with Tube ISO-K 200, Stainless Steel, Tube O.D. 219mm	100	213	443-ISO200-TU	194.00
250	Flange with Tube ISO-K 250, Stainless Steel, Tube O.D. 273mm	100		443-ISO250-TU	246.00

	Straight Connectors, 100mm long	A	B	Part Number	Euro
63	ISO-K 63 Straight Connector, 100mm long	100	70	443-ISO063-X2	105.00
100	ISO-K 100 Straight Connector, 100mm long	100	102	443-ISO100-X2	162.00
160	ISO-K 160 Straight Connector, 100mm long	100	153	443-ISO160-X2	235.00
200	ISO-K 200 Straight Connector, 100mm long	100	213	443-ISO200-X2	334.00
250	ISO-K 250 Straight Connector, 100mm long	100		443-ISO250-X2	497.00

	Tee Piece	A	B	Part Number	Euro
63	ISO-K 63 Tee Piece	88	70	443-ISO063-X3	191.00
100	ISO-K 100 Tee Piece	108	102	443-ISO100-X3	265.00
160	ISO-K 160 Tee Piece	138	153	443-ISO160-X3	615.00
200	ISO-K 200 Tee Piece	178		443-ISO200-X3	632.00
250	ISO-K 250 Tee Piece	208		443-ISO250-X3	879.00

	4 Way Cross	A	B	Part Number	Euro
63	ISO-K 63 4 Way Cross	88	70	443-ISO063-X4	283.00
100	ISO-K 100 4 Way Cross	108	102	443-ISO100-X4	398.00
160	ISO-K 160 4 Way Cross	138	153	443-ISO160-X4	735.00
200	ISO-K 200 4 Way Cross	178		444-ISO200-X4	997.00
250	ISO-K 250 4 Way Cross	208		445-ISO250-X4	1277.00

	90° Elbow	A	B	Part Number	Euro
63	ISO-K 63 90° Elbow	88		443-ISO063-L	122.00
100	ISO-K 100 90° Elbow	108		443-ISO100-L	212.00
160	ISO-K 160 90° Elbow	138		443-ISO160-L	378.00
200	ISO-K 200 90° Elbow	178		444-ISO200-L	480.00
250	ISO-K 250 90° Elbow	208		445-ISO250-L	640.00

	Adapter Tube ISO-K – ISO-K	A	B	Part Number	Euro
100-63	Flange Adaptor ISO-K100 – K63	75		443-ISO100-063	119.00
160-63	Flange Adaptor ISO-K160 – K63	75		443-ISO160-063	158.00
160-100	Flange Adaptor ISO-K160 – K100	75		443-ISO160-100	169.00
250-63	Flange Adaptor ISO-K250 – K63	75		443-ISO250-063	388.00
250-100	Flange Adaptor ISO-K250 – K100	75		443-ISO250-100	399.00
250-160	Flange Adaptor ISO-K250 – K160	75		443-ISO250-160	558.00

3.15: Flexible Bellows Connectors and Edge Welded Bellows Connectors

CF Flexible Connector

Flexible Bellows Connectors are ideal to connect pumps etc. to vacuum apparatus. Allectra offers three standard lengths . Special lengths up to 3m are available to order.

Edge Welded Bellows are very flexible and are suitable for frequent cycling. They can also be used for vibration isolation.

Specification Bellows Connectors

Material:	Stainless Steel
Temperature:	max. 450°C (without O Ring)
Leakrate	< 10^{-9} mbar l/s
Max. Compression	ca. 50%
Max. Extension	ca. 50%

CF Versions

CF versions have one fixed and one rotatable flange.

Special lengths are available to order.

Edge Welded Bellows CF Types

Material: 316L
Cycle Lifetime: 10,000+

Please ask sales office for data sheet

Other lengths and styles available on request.

CF Edge Welded Bellows

	FLEXIBLE CONNECTOR CF	Length	Part Number	EURO
DN16CF	DN16CF Flexible Connector,	250	452-BEL-C16-0500	86.00
DN16CF	DN16CF Flexible Connector,	500	452-BEL-C16-0750	88.00
DN16CF	DN16CF Flexible Connector,	750	452-BEL-C16-750	109.00
DN16CF	DN16CF Flexible Connector,	1000	452-BEL-C16-1000	119.00
DN40CF	DN40CF Flexible Connector,	250	452-BEL-C40-0250	118.00
DN40CF	DN40CF Flexible Connector,	500	452-BEL-C40-0500	134.00
DN40CF	DN40CF Flexible Connector,	750	452-BEL-C40-0750	144.00
DN40CF	DN40CF Flexible Connector,	1000	452-BEL-C40-1000	159.00
DN63CF	DN63CF Flexible Connector	250	452-BEL-C63-0250	229.00
DN63CF	DN63CF Flexible Connector	500	452-BEL-C63-0500	252.00
DN63CF	DN63CF Flexible Connector	750	452-BEL-C63-0750	275.00
DN63CF	DN63CF Flexible Connector	1000	452-BEL-C63-1000	298.00

	FLEXIBLE CONNECTOR KF	Length	Part Number	EURO
DN16KF	DN16KF Flexible Connector,	250	452-BEL-K16-0250	55.00
DN16KF	DN16KF Flexible Connector,	500	452-BEL-K16-0500	66.00
DN16KF	DN16KF Flexible Connector,	750	452-BEL-K16-0750	77.00
DN16KF	DN16KF Flexible Connector,	1000	452-BEL-K16-1000	88.00
DN25KF	DN25KF Flexible Connector,	250	452-BEL-K25-0250	77.00
DN25KF	DN25KF Flexible Connector,	500	452-BEL-K25-0500	83.00
DN25KF	DN25KF Flexible Connector,	750	452-BEL-K25-0750	91.00
DN25KF	DN25KF Flexible Connector,	1000	452-BEL-K25-1000	98.00
DN40KF	DN40KF Flexible Connector,	250	452-BEL-K40-0250	92.00
DN40KF	DN40KF Flexible Connector,	500	452-BEL-K40-0500	104.00
DN40KF	DN40KF Flexible Connector,	750	452-BEL-K40-0750	112.00
DN40KF	DN40KF Flexible Connector,	1000	452-BEL-K40-1000	120.00
DN50KF	DN50KF Flexible Connector,	250	452-BEL-K50-0250	124.00
DN50KF	DN50KF Flexible Connector,	500	452-BEL-K50-0500	133.00
DN50KF	DN50KF Flexible Connector,	750	452-BEL-K50-0750	151.00
DN50KF	DN50KF Flexible Connector,	1000	452-BEL-K50-1000	168.00

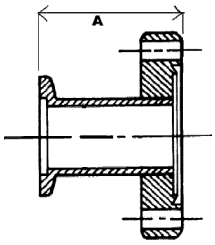
	Edge Welded Bellows CF	Length	Part Number	EURO
DN16CF	Edge Welded Bellows CF (Extension +7/ -14mm)	110	452-CFX2-16-BEL	102.00
DN40CF	Edge Welded Bellows CF (Extension +8/ -16mm)	160	452-CFX2-40-BEL	152.00
DN63CF	Edge Welded Bellows CF (Extension +10/ -20mm)	250	452-CFX2-63-BEL	323.00
DN100CF	Edge Welded Bellows CF (Extension +10/ -20mm)	250	452-CFX2-100-BEL	459.00
DN160CF	Edge Welded Bellows CF (Extension +10/ -20mm)	270	452-CFX2-160-BEL	725.00

3.16: Adapter CF - KF / CF - ISO-K / ISO-K - KF

Adaptor Flanges from CF to KF
Adaptor Flanges from CF to ISO-K (LF)
Adaptor Flanges from ISO-K(LF) to KF

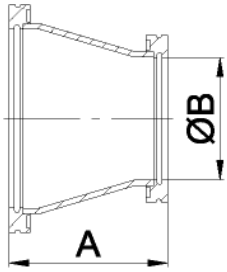
CF to KF Adaptors

CF to KF Adapter



16-16	Adapter DN16CF to DN16KF	36	-	460-C16-K16	41.00
16-25	Adapter DN16CF to DN25KF	36	-	460-C16-K25	43.00
40-16	Adapter DN40CF to DN16KF	36	-	460-C40-K16	54.00
40-25	Adapter DN40CF to DN25KF	36	-	460-C40-K25	59.00
40-40	Adapter DN40CF to DN40KF	50	-	460-C40-K40	63.00
63-40	Adapter DN63CF to DN 40KF	50	-	460-C63-K40	104.00
100-40	Adapter DN100CF to DN40KF	50	-	460-C100-K40	128.00

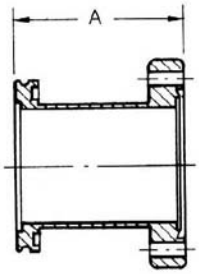
ISO-K (LF) to KF Adapter



ISO – KF	Adapter ISO-K (LF) – KF	A	B	Part Number	Euro
63-25	Adapter ISO-K63 to DN25KF	40		460-ISO63-K25	58.00
63-40	Adapter ISO-K63 to DN40KF	40		461-ISO63-K40	68.00
63-50	Adapter ISO-K63 to DN50KF	40		462-ISO63-K50	98.00
100-40	Adapter ISO-K100 to DN40KF	40		463-ISO100-K40	98.00
100-50	Adapter ISO-K100 to DN50KF	40		464-ISO100-K50	109.00

CF-ISO	Adapter CF – ISO-K (LF)	A	B	Part Number	Euro
63-63	Adapter DN63CF to 63 ISO-K	90		460-C63-ISO63	189.00
100-100	Adapter DN100CF to 100 ISO-K	90		441-C100-ISO100	239.00
160-160	Adapter DN160CF to 160 ISO-K	90		441-C160-ISO160	359.00
200-200	Adapter DN200CF to 200 ISO-K	90		441-C200-ISO200	519.00

CF to ISO-K (LF) Adapter



UHV Compatible Multimode Optical Fibres , UHV Fibre Optic Feedthroughs

UHV Fibre Optic Feedthrough and SMA Coupler

Allectra multimode step index silica-silica fibres have a pure silica core and doped silica cladding. The outer coating is a copper alloy which is UHV compatible and solderable.

The UV grade (high OH type)will transmit light from 180 to 1200nm . The IR grade (low OH type) will transmit light from 500- 2600nm. They have very low fluorescence and are recommended for spectroscopy.

Allectra Optical Fibres are offered as 300, 600 and 900 mm lengths terminating at one end with a special UHV compatible SMA coupler while the other end is polished and terminated with a metal ferrule. The standard core diameter is 600 microns. 200 and 400 microns are available to order.

Compatible Vacuum Feedthroughs on CF and KF vacuum flanges are offered.

Allectra Optical Fibres can be soldered into bundles to customer specification.

UHV Optical Fibre

Vacuum: UHV
Temperature: - 270°C to 700°C
Fibre Type: Step Index Multimode
Core: High purity synthetic Silica
Cladding: Doped Silica
Outer Coating: Proprietary Metal alloy
Minimum bend radius:100 x fibre diameter
Typical spot values of attenuation:
248nm (KrF laser) < 1.2dB/m.
Termination: Vacuum SMA and polished end.
Length : 300mm – other lengths to order

Type	UHV Metallised Fibre Optic Cable , SMA / polished end	length	Core diam. microns	Part Number	Euro
UV	Fibre Optic Cable , metal coating	300	600	151-FOC-UV-300-S	530
UV	Fibre Optic Cable , metal coating	600	600	151-FOC-UV-600-S	565
UV	Fibre Optic Cable , metal coating	900	600	151-FOC-UV-900-S	600
IR	Fibre Optic Cable , metal coating	300	600	151-FOC-IR-300-S	530
IR	Fibre Optic Cable , metal coating	600	600	151-FOC-IR-600-S	565
IR	Fibre Optic Cable , metal coating	900	600	151-FOC-IR-900-S	600

Vacuum Feedthroughs

Vacuum: UHV (CF types)
Construction: All Metal
Flange: DN16CF , DN40CF
(High Vacuum types on DN16KF or DN40KF
Optical Fibre Connector:
vacuum : special SMA
air: standard SMA
Multiple Optical Fibre Feedthroughs
On request

Flange	Vacuum Feedthrough UV Fibre		Part Number	Euro
16CF	UHV Vacuum Feedthrough UV Fibre	600	150-FFT-UV-C16	610
40CF	UHV Vacuum Feedthrough UV Fibre	600	150-FFT-UV-C40	615
16KF	Vacuum Feedthrough UV Fibre	600	150-FFT-UV-K16	605
40KF	Vacuum Feedthrough UV Fibre	600	150-FFT-UV-K40	610

Flange	Vacuum Feedthrough IR Fibre		Part Number	Euro
16CF	UHV Vacuum Feedthrough IR Fibre	600	150-FFT-IR-C16	610
40CF	UHV Vacuum Feedthrough IR Fibre	600	150-FFT-IR-C40	615
16KF	Vacuum Feedthrough IR Fibre	600	150-FFT-IR-K16	605
40KF	Vacuum Feedthrough IR Fibre	600	150-FFT-IR-K40	610

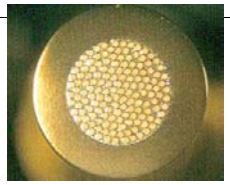
	UHV Optical Fibre Coupler	Part Number	Euro
	UHV SMA Optical Fibre Coupler	151-FC-UHV	43

UHV Fibre Coupler

Fibre Connector : SMA both ends
Construction: Stainless Steel with vent holes
Length: 23.6 mm
Diameter: 6.35 mm

	Air Use Optical Fibre Coupler	Part Number	Euro
	SMA Optical Fibre Coupler	151-FC-AIR	20

The enviromental properties of Allectra metal coated fibres mean fibre bundles can now be used in vacuum applications. The thin metal coating ensures a good packing fraction.



Fibre Bundle Soldered into Metal Ferrule

For special applications, and custom made assemblies , please call the sales office

Atlas Bi-Metal Flanges

The development of the Atlas Flange has opened up the possibility of using Aluminium for UHV Chambers while maintaining flexible joints with standard stainless steel components using the familiar CF flange system. The Atlas Bi-Metal flange has a stainless steel knife edge face which is bonded to an Aluminium plate or tube. The bond is made with a patented process developed by Atlas Technologies Inc. which employs two interlayers of Titanium and Copper respectively. The resulting bond is extremely strong and stable over a wide range of temperatures from Cryogenic to 400.

Aluminium is a very good UHV material with excellent out-gassing properties and is finding increasing use in synchrotrons and semi-conductor manufacturing plants amongst others. The Atlas Flange allows Aluminium chambers to be connected directly with conventional copper gaskets to stainless steel components such as pumps , gauges or valves. Atlas Bi-Metal flanges have now been chosen by the new SOLEIL synchrotron.

Left to Right : Rotatable DN100CF , Fixed DN16CF, Custom DN160CF.

Specification

Stainless Steel: 316L
Aluminium:6061-T6
Vacuum: UHV
Temperature: to 250^{0}C

Welding: TIG or e-beam

Bond: Explosion bond with interlayers of Titanium and Copper
(Atlas Technologies Inc. Patent Process)

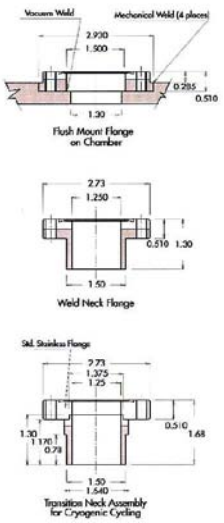
Aluminium UHV Chambers with Atlas Bi-Metal CF Flanges

Custom Flanges ,Cryogenic Transitions and Custom Chambers on request
Call Sales Office

Properties of Aluminium for UHV

- High Thermal Conductivity – low temperature bake , easy to de-gas,
- Easy to machine
- Can be Extruded
- Low H_2O , H_2 and C desorption- suitable for extreme UHV , to 10^{-13} mbar
- Non-magnetic
- Good Characteristics in Radiation Environment
- Light Weight compared to Stainless Steel

Aluminium UHV Chamber machined from a single block -fitted with Atlas flanges



Atlas Bi-Metal flanges are offered in three flange types:

Flush Mount for directly welding to the chamber wall
Weld Neck for welding to Al tube
Cryogenic Transition

The figure on the left shows examples of these for the DN40CF size (dimensions in inches) . Atlas flanges are available in all sizes from DN16CF to DN250CF. with both fixed and rotatable versions.

Full dimensional information is available on request or on the Atlas web site at www.atlasuhv.com

For prices of Atlas UHV Flanges, please call the sales office