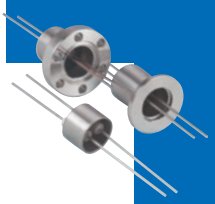
Power feedthroughs

Introduction



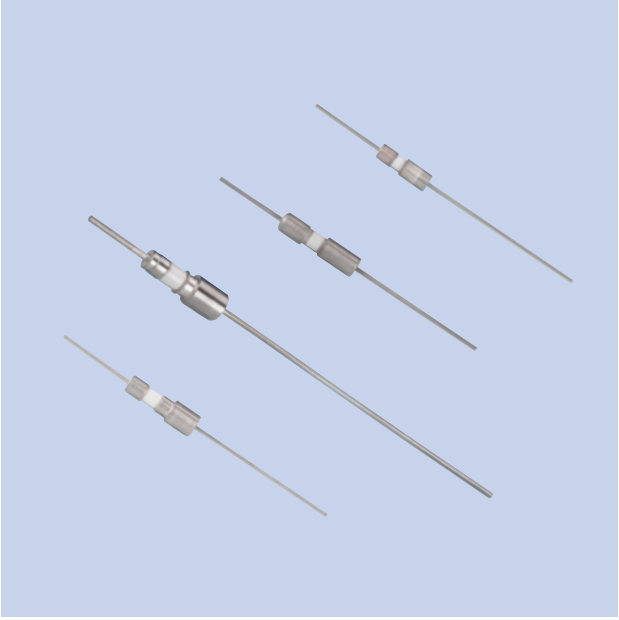
General specifications

Type	Specification voltage/current	Maximum bakeout temperature	Conductor materials	Number of pins
Low 	500 to 5,000V DC to 15A	CF Flange 450°C ISO KF Flange 150°C Weldable 450°C	See tables	1 to 8
Medium 	to 5,000V DC to 30A	CF Flange 450°C ISO KF Flange 150°C Weldable 450°C	See tables	1 to 10
High 	3,000 to 100,000V DC to 600A	CF Flange 450°C ISO KF Flange 150°C Weldable 450°C Baseplate 150°C	See tables	1 to 4
Water-cooled 	to 100,000V DC to 1000A	CF Flange 450°C ISO KF Flange 150°C Weldable 450°C	See tables	1 to 4
Power connectivity 	5,000 to 40,000V DC 5 to 70A	CF Flange 450°C ISO KF Flange 150°C Weldable 450°C	See tables	1 to x 13

All dimensions are nominal in millimetres unless specified

Power Low

500 to 5,000V / to 15A / 1 pin



Features

- Single-pin construction
- Low power
- 5 different conductor materials available
- In-vacuum accessories available – see section 6.7
- Custom feedthrough configurations available upon request

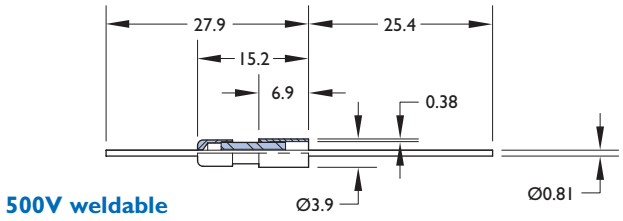
Specifications

Voltage[1]	500 – 5,000V DC maximum
Current	mA to 30A
Material	
Shell	See tables for options
Pins	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV	1×10^{-10} mbar
Temperature range[2]	
Weldable feedthrough	-200°C to 450°C
Dimensions	Reference only, subject to change

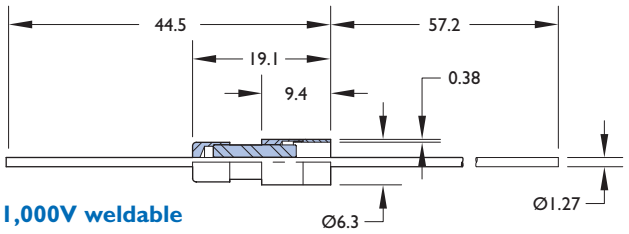
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

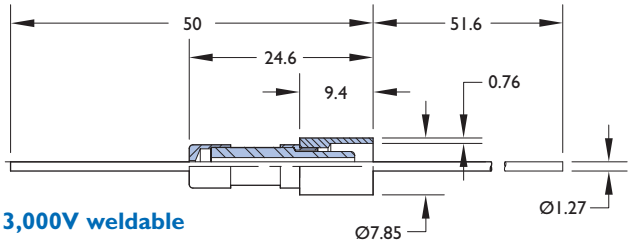
UHV Series



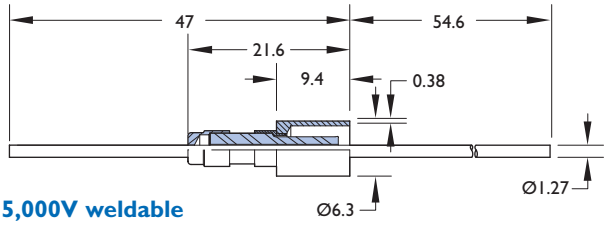
500V weldable



1,000V weldable



3,000V weldable



5,000V weldable

All dimensions are nominal in millimetres unless specified

Power Low

500 to 5,000V / to 15A / 1 pin

Weldable

Volts	Amps	Adaptor	Conductor material	Reference	Part number
500	8	Nickel	Molybdenum	HV-10M	9411000
500	16	Nickel	Copper	HV-3C	9411001
500	5	Nickel	Nickel	HV-2N	9411002
500	*	Nickel	Stainless steel	HV-S	9411003
500	3	Nickel	Copper	CHV-3C	9411004
500	2	Nickel	Constantan	CHV-2N	9411005
500	*	Nickel	Stainless steel	CHV-S	9411006

* Instrumentation current only.

Part numbers printed in light blue indicate products that are suitable for -200°C cryogenic applications

Weldable

Volts	Amps	Conductor material	Reference	Part number
1000	15	Copper	HV1-15C	9411018
1000	5	Nickel	HV1-5N	9411019
1000	1	Stainless steel	HV1-1S	9411020

Weldable

Volts	Amps	Conductor material	Reference	Part number
3000	15	Copper	HV3-15C	9421020
3000	5	Nickel	HV3-5N	9421021
3000	1	Stainless steel	HV3-1S	9421022

Weldable

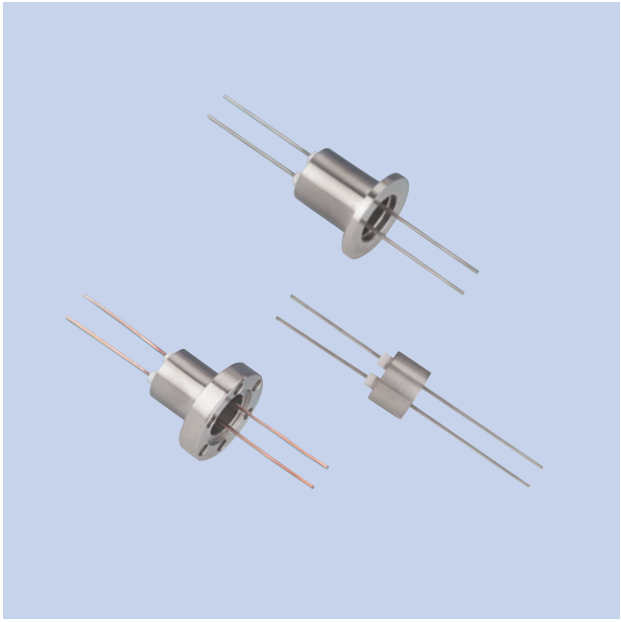
Volts	Amps	Conductor material	Reference	Part number
5000	15	Copper	HV5-15C	9421007
5000	5	Nickel	HV5-5N	9421008
5000	1	Stainless steel	HV5-1S	9421009

Connectors must be ordered separately

All dimensions are nominal in millimetres unless specified

Power Low

500 to 1,000V / to 15A / 2 pins



Features

- 2-pin construction
- Low power
- 4 different conductor materials available
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

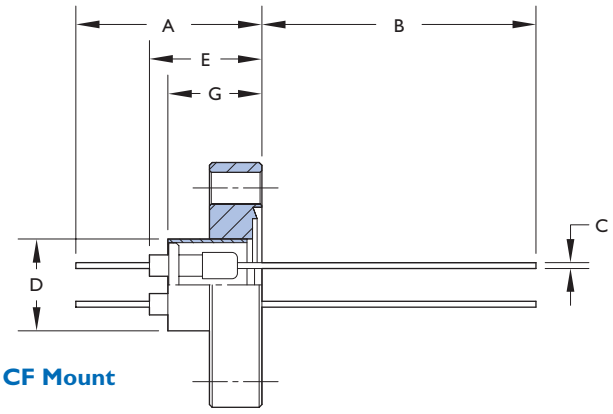
Specifications

Voltage[1]	500 – 1,000V DC maximum
Current	to 15A
Material	
Flanges	304ss
Shell	304ss
Pins	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

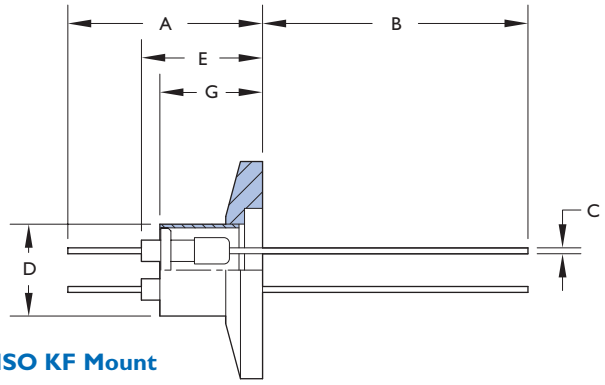
[1] See intended operating parameters in introductory section.

[2] Overall assembly ratings must be adjusted to that of the lowest rated component.

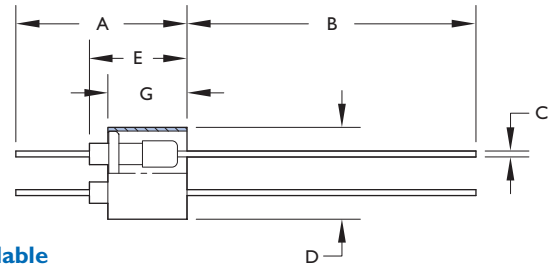
UHV and HV series



CF Mount



ISO KF Mount



Weldable

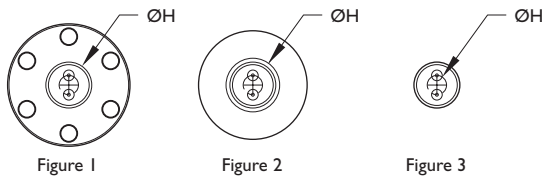


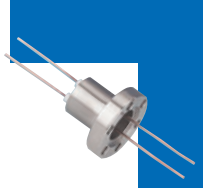
Figure 1 Figure 2 Figure 3

End view Air-side

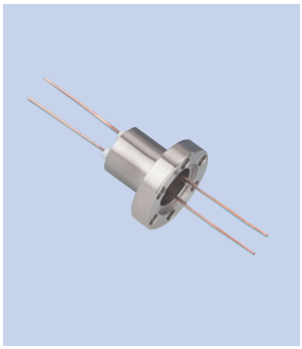
All dimensions are nominal in millimetres unless specified

Power Low

500 to 1,000V / to 15A / 2 pins



CF

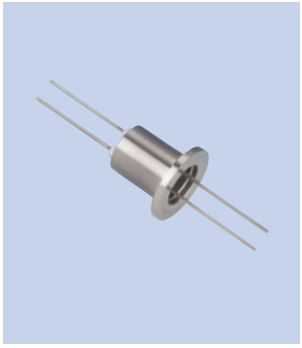


Volts	Amps	Conductor material	End view fig.	A	B	C	D	E	G	H	Reference	Part number
DN16CF Flange mount												
500	10	Molybdenum	1	25	39	0.8	14.7	12	13	5.3	HV-10M-2-C16	**9412000**
500	3	Copper	1	25	39	0.8	14.7	12	13	5.3	HV-3C-2-C16	**9412001**
1000	15	Copper	1	67	35	1.3	29.7	26	19	7.8	HV1-15C-2-C16	**9412011**
500	2	Nickel	1	25	39	0.8	14.7	12	13	5.3	HV-2N-2-C16	**9412002**
1000	5	Nickel	1	67	35	1.3	29.7	26	19	7.8	HV1-5N-2-C16	**9412012**
500	*	Stainless steel	1	25	39	0.8	14.7	12	13	5.3	HV-S-2-C16	**9412003**
1000	1	Stainless steel	1	69	35	1.3	29.7	26	19	7.8	HV1-1S-2-C16	**9412013**

* Instrumentation current only

Connectors must be ordered separately

ISO KF

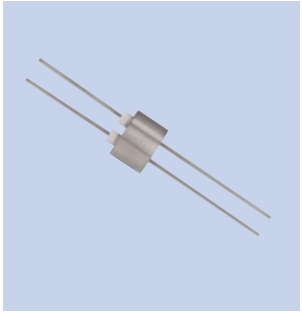


Volts	Amps	Conductor material	End view fig.	A	B	C	D	E	G	H	Reference	Part number
DN16KF Flange mount												
500	10	Molybdenum	2	26	37	0.8	16.0	13	13	5.3	HV-10M-2-K16	**9413000**
500	3	Copper	2	26	37	0.8	16.0	13	13	5.3	HV-3C-2-K16	**9413001**
1000	15	Copper	2	67	35	1.3	29.7	26	19	7.8	HV1-15C-2-K16	**9413011**
500	2	Nickel	2	26	37	0.8	16.0	13	13	5.3	HV-2N-2-K16	**9413002**
1000	5	Nickel	2	67	35	1.3	29.7	26	19	7.8	HV1-5N-2-K16	**9413012**
500	*	Stainless steel	2	26	37	0.8	16.0	13	13	5.3	HV-S-2-K16	**9413003**
1000	1	Stainless steel	2	67	35	1.3	29.7	26	19	7.8	HV1-1S-2-K16	**9413013**

* Instrumentation current only

Connectors must be ordered separately

Weldable



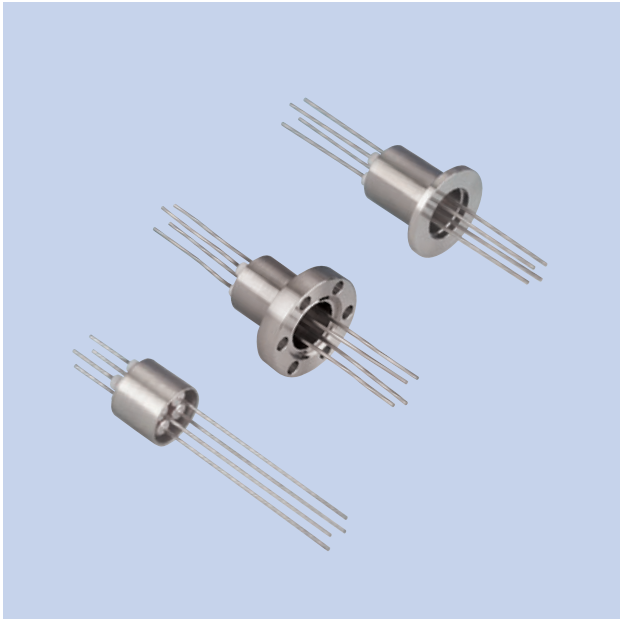
Volts	Amps	Conductor material	End view fig.	A	B	C	D	E	G	H	Reference	Part number
500	10	Molybdenum	3	24	40	0.8	12.7	12	11	5.3	HV-10M-2	**9411007**
500	3	Copper	3	24	40	0.8	12.7	13	11	5.3	HV-3C-2	**9411008**
1000	15	Copper	3	54	48	1.27	19.0	17	13	7.8	HV1-15C-2	**9411021**
500	2	Nickel	3	24	40	0.8	12.7	13	11	5.3	HV-2N-2	**9411009**
1000	5	Nickel	3	54	48	1.27	19.0	17	13	7.8	HV1-5N-2	**9411022**
500	*	Stainless steel	3	24	40	0.8	12.7	13	11	5.3	HV-S-2	**9411010**
1000	1	Stainless steel	3	54	48	1.27	19.0	17	13	7.8	HV1-1S-2	**9411023**

* Instrumentation current only

Connectors must be ordered separately

Power Low

500 to 1,000V / to 15A / 4 pins



Features

- 4-pin construction
- Low power
- 4 different conductor materials available
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

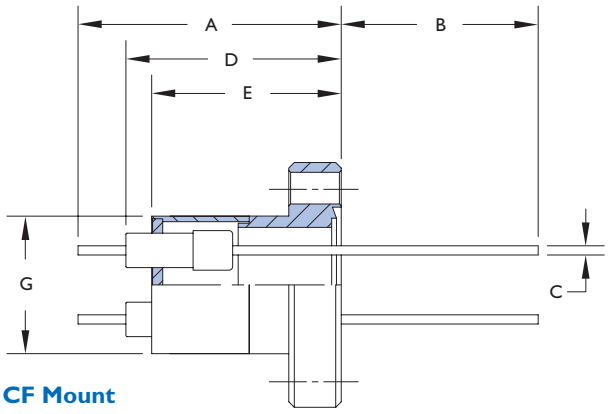
Specifications

Voltage[1]	500 – 1,000V DC maximum
Current	to 15A
Material	
Flanges	304ss
Shell	304ss
Pins	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

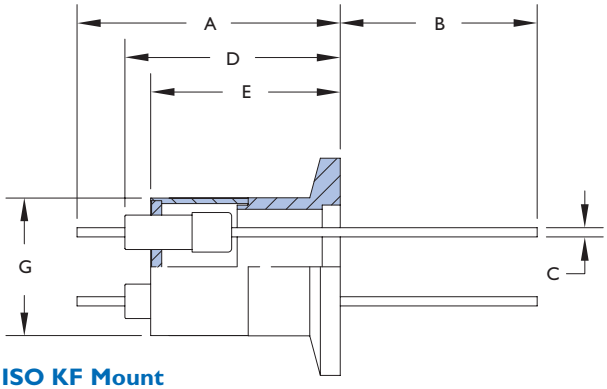
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

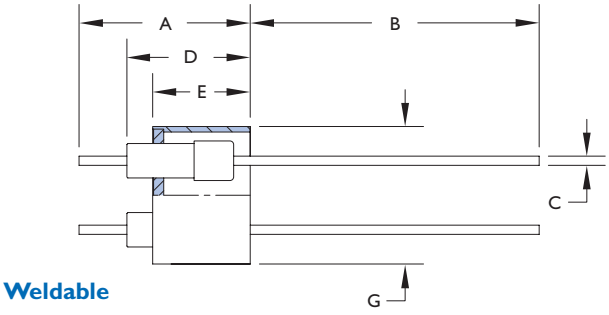
UHV and HV series



CF Mount



ISO KF Mount



Weldable

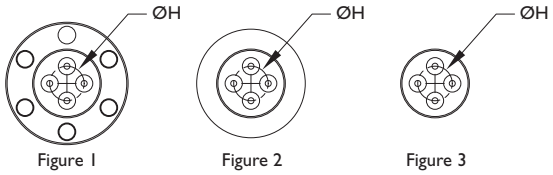


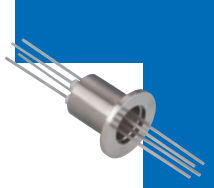
Figure 1 Figure 2 Figure 3

End view Air-side

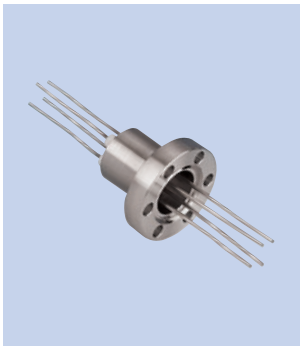
All dimensions are nominal in millimetres unless specified

Power Low

500 to 1,000V / to 15A / 4 pins



CF

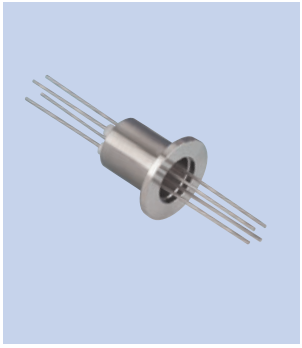


Volts	Amps	Conductor material	End view fig.	A	B	C	D	E	G	H	Reference	Part number
DN16CF Flange mount												
500	8	Molybdenum	1	25	39	0.8	15	12	12.7	6.4	HV-10M-4-C16	**9412004**
500	16	Copper	1	25	39	0.8	15	12	12.7	6.4	HV-3C-4-C16	**9412005**
1000	27	Copper	1	67	35	1.3	30	16	19.1	9.7	HV1-15C-4-C16	**9412014**
500	5	Nickel	1	25	39	0.8	15	12	12.7	6.4	HV-2N-4-C16	**9412006**
1000	8	Nickel	1	67	35	1.3	30	16	19.1	9.7	HV1-5N-4-C16	**9412015**
500	*	Stainless steel	1	25	39	0.8	15	12	12.7	6.4	HV-S-4-C16	**9412007**
1000	1	Stainless steel	1	67	35	1.3	30	16	19.1	9.7	HV1-1S-4-C16	**9412016**

* Instrumentation current only

Connectors must be ordered separately

ISO KF

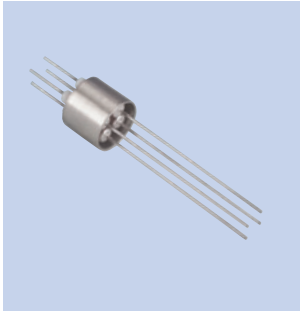


Volts	Amps	Conductor material	End view fig.	A	B	C	D	E	G	H	Reference	Part number
DN16KF Flange mount												
500	8	Molybdenum	2	26	37	0.8	16	14	12.7	6.4	HV-10M-4-K16	**9413004**
500	16	Copper	2	26	37	0.8	16	14	12.7	6.4	HV-3C-4-K16	**9413005**
1000	27	Copper	2	67	35	1.3	30	26	19.1	9.7	HV1-15C-4-K16	**9413014**
500	5	Nickel	2	26	37	0.8	16	14	12.7	6.4	HV-2N-4-K16	**9413006**
1000	8	Nickel	2	67	35	1.3	30	26	19.1	9.7	HV1-5N-4-K16	**9413015**
500	*	Stainless steel	2	26	37	0.8	16	14	12.7	6.4	HV-S-4-K16	**9413007**
1000	1	Stainless steel	2	67	35	1.3	30	26	19.1	9.7	HV1-1S-4-K16	**9413016**

* Instrumentation current only

Connectors must be ordered separately

Weldable



Volts	Amps	Conductor material	End view fig.	A	B	C	D	E	G	H	Reference	Part number
500	8	Molybdenum	3	24	40	0.8	14	11	12.6	6.4	HV-10M-4	**9411011**
500	16	Copper	3	24	40	0.8	14	11	12.6	6.4	HV-3C-4	**9411012**
1000	27	Copper	3	54	48	1.3	17	14	18.9	9.7	HV1-15C-4	**9411024**
500	5	Nickel	3	24	40	0.8	14	11	12.6	6.4	HV-2N-4	**9411013**
1000	8	Nickel	3	54	48	1.3	17	14	18.9	9.7	HV1-5N-4	**9411025**
500	*	Stainless steel	3	24	40	0.8	14	11	12.6	6.4	HV-S-4	**9411014**
1000	1	Stainless steel	3	54	48	1.3	17	14	18.9	9.7	HV1-1S-4	**9411026**

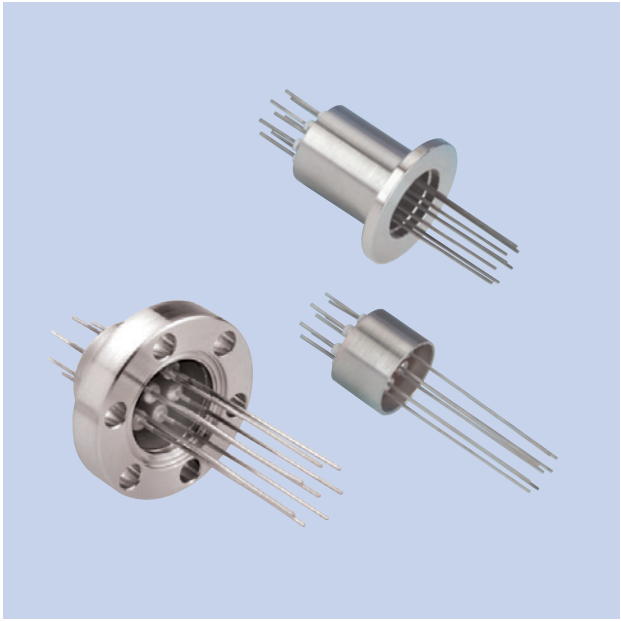
* Instrumentation current only

Connectors must be ordered separately

All dimensions are nominal in millimetres unless specified

Power Low

500 to 1,000V / to 15A / 8 pins



Features

- 8-pin construction
- Low power
- 3 different conductor materials available
- In-vacuum accessories available
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

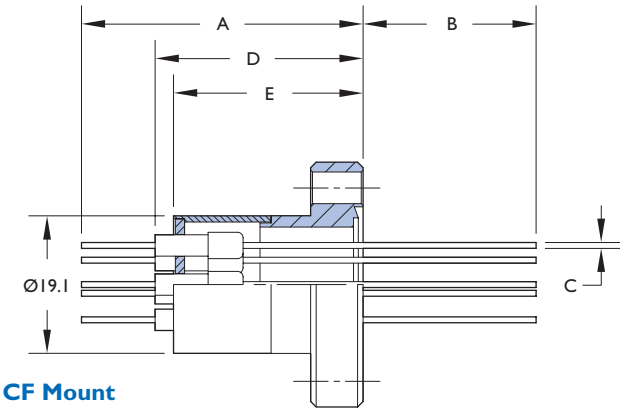
Specifications

Voltage[1]	500 – 1,000V DC maximum
Current	to 15A
Material	
Flanges	304ss
Shell	304ss
Pins	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

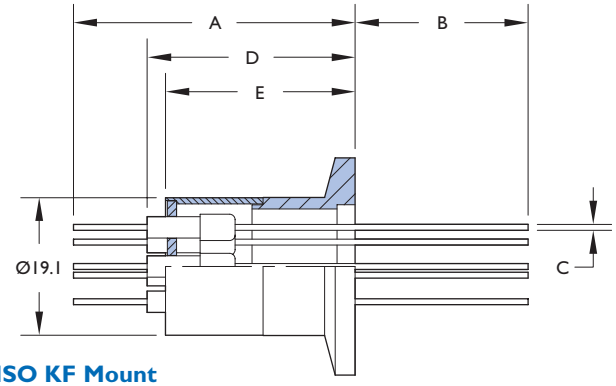
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

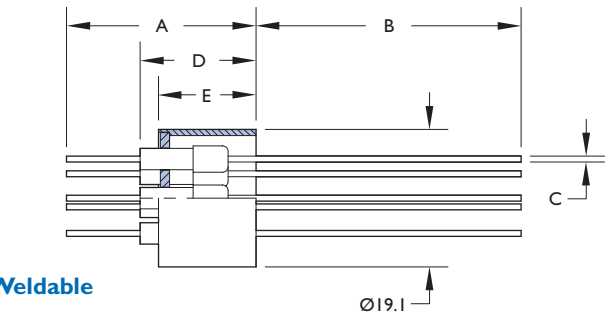
UHV and HV series



CF Mount



ISO KF Mount



Weldable

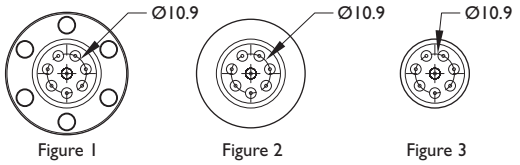


Figure 1 Figure 2 Figure 3

End view Air-side

All dimensions are nominal in millimetres unless specified

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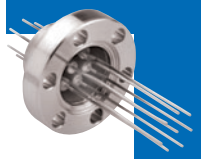
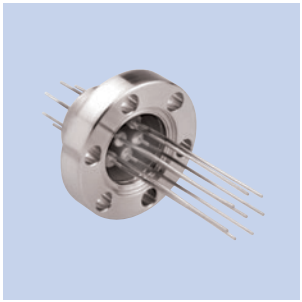
Power Low

500 to 1,000V / to 15A / 8 pins



CF

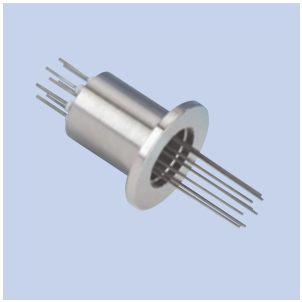


Volts	Amps	Conductor material	End view figure	A	B	C	D	E	Reference	Part number
DN16CF Flange mount										
500	10	Molybdenum	1	39	25	0.8	29	26	HV-10M-8-C16	**9412008**
1000	15	Copper	1	44	89	1.3	32	32	HV1-15C-C16	**9412021**
500	2	Nickel	1	39	25	0.8	29	26	HV-2N-8-C16	**9412009**
1000	5	Nickel	1	44	89	1.3	32	32	HV1-5N-8-C16	**9412022**
500	5*	Stainless steel	1	39	25	0.8	29	26	HV-S-8-C16	**9412010**
1000	5*	Stainless steel	1	44	89	1.3	32	32	HV1-5-8-C16	**9412020**

* Instrumentation current only

Connectors must be ordered separately

ISO KF

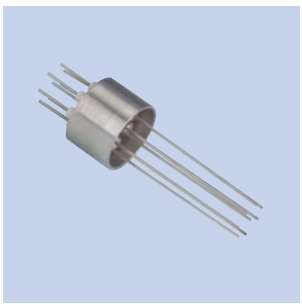


Volts	Amps	Conductor material	End view figure	A	B	C	D	E	Reference	Part number
DN16KF Flange mount										
500	10	Molybdenum	2	39	25	0.8	29	26.2	HV-10M-8-K16	**9413008**
1000	15	Copper	2	44	89	1.3	32	32	HV1-15C8-K16	**9413021**
500	2	Nickel	2	39	25	0.8	29	26.2	HV-2N-8-K16	**9413009**
1000	15	Nickel	2	44	89	1.3	32	32	HV1-5N-8-K16	**9413022**
500	5*	Stainless steel	1	39	25	0.8	29	26.2	HV-S-8-K16	**9413010**
1000	5*	Stainless steel	2	44	89	1.3	32	32	HV1-S-8-K16	**9413021**

* Instrumentation current only

Connectors must be ordered separately

Weldable



Volts	Amps	Conductor material	End view figure	A	B	C	D	E	Reference	Part number
500	10	Molybdenum	3	26	37	0.8	16	13.5	HV-10M-8	**9411015**
1000	15	Copper	3	44	89	1.3	32	32	HV1-15C-8	**9411031**
500	2	Nickel	3	26	37	0.8	16	13.5	HV-2N-8	**9411016**
1000	5	Nickel	3	44	89	1.3	32	32	HV1-5N-8	**9411032**
500	5*	Stainless steel	3	26	37	0.8	16	13.5	HV-S-8	**9411017**
1000	5*	Stainless steel	3	44	89	1.3	32	32	HV1-S-8	**9411030**

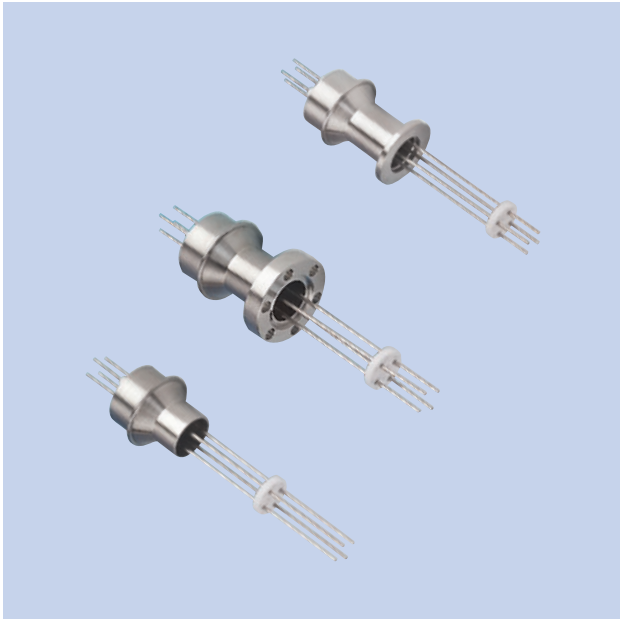
* Instrumentation current only

Connectors must be ordered separately

All dimensions are nominal in millimetres unless specified

Power Medium

To 2,500V / to 10A / 4 to 10 pins



Features

- 4 to 10-pin construction
- Medium power
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

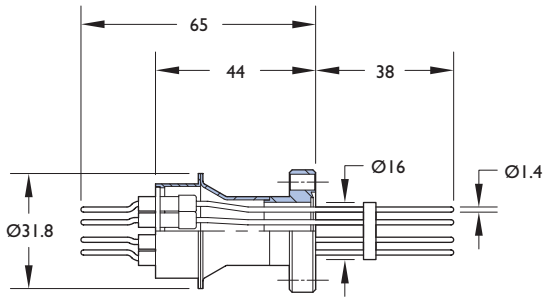
Specifications

Voltage[1]	2,500V DC maximum
Current	10A
Material	
Flanges	304ss
Shell	304ss
Pins	Alumel®
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

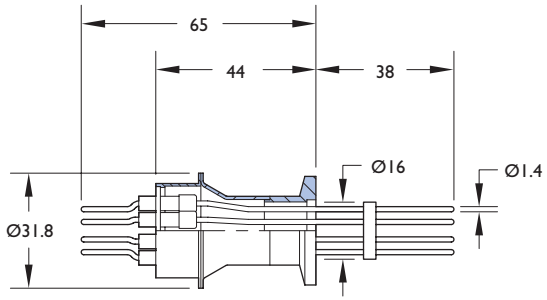
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

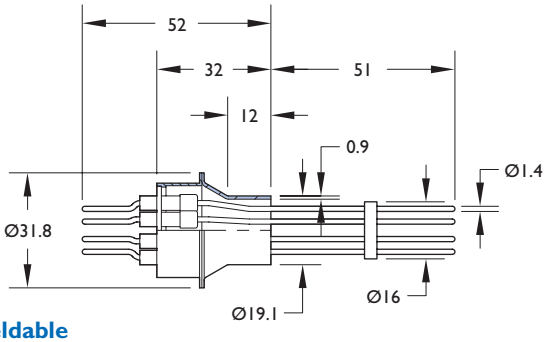
UHV and HV series



CF Mount



ISO KF Mount



Weldable

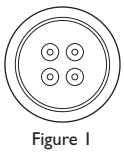


Figure 1

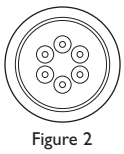


Figure 2

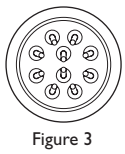


Figure 3

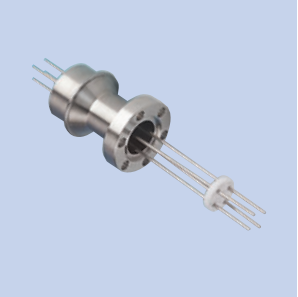
End view Air-side

All dimensions are nominal in millimetres unless specified

Power Medium

To 2,500V / to 10A / 4 to 10 pins

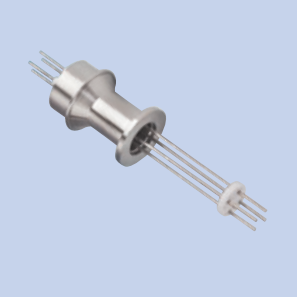
CF



No. of pins	Flange mount	End view figure	Reference	Part number
4	DN16CF	1	HV2-10A-4-C16	**9422000**
6	DN16CF	2	HV2-10A-6-C16	**9422001**
10	DN16CF	3	HV2-10A-10-C16	**9422002**

Connectors must be ordered separately

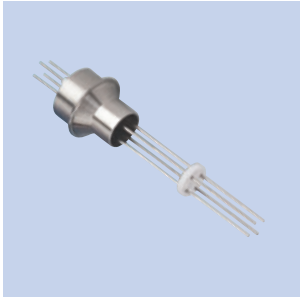
ISO KF



No. of pins	Flange mount	End view figure	Reference	Part number
4	DN16KF	1	HV2-10A-4-K16	**9423000**
6	DN16KF	2	HV2-10A-6-K16	**9423001**
10	DN16KF	3	HV2-10A-10-K16	**9423002**

Connectors must be ordered separately

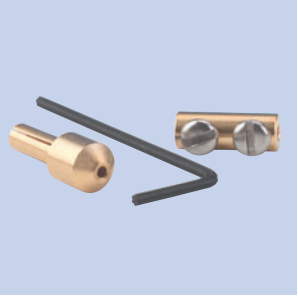
Weldable



No. of pins	End view figure	Reference	Part number
4	1	HV2-10A-4	**9421000**
6	2	HV2-10A-6	**9421001**
10	3	HV2-10A-10	**9421002**

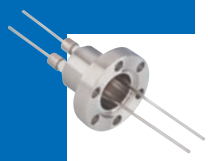
Connectors must be ordered separately

Accessories



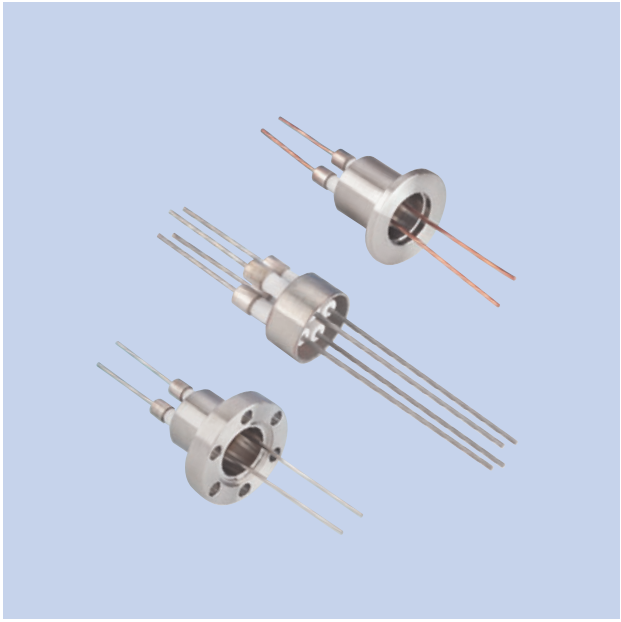
Accessory type	Material	Quantity per pack	Reference	Part number
TC Crimp	Nickel-200	5	TCP-N1	**9923018**
Ceramic spacer 4/10 pin	Alumina	1	CS4/10-2	**9951100**
Ceramic spacer, 6 pin	Alumina	1	CS6-2	**9951101**
Ceramic bead	Alumina	300mm	CBO64	**9951001**

All dimensions are nominal in millimetres unless specified



Power Medium

5,000 volts / 15 amps / 2 and 4 pins



Features

- 2 and 4-pin construction
- Medium power
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

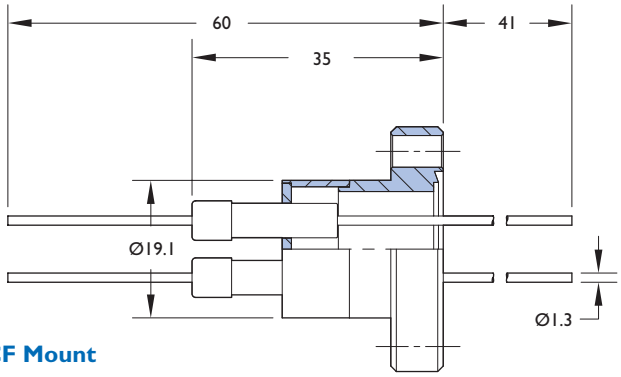
Specifications

Voltage[1]	5,000V DC
Current	to 15A
Material	
Flanges	304ss
Shell	304ss
Pins	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
Weldable feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Dimensions	Reference only, subject to change

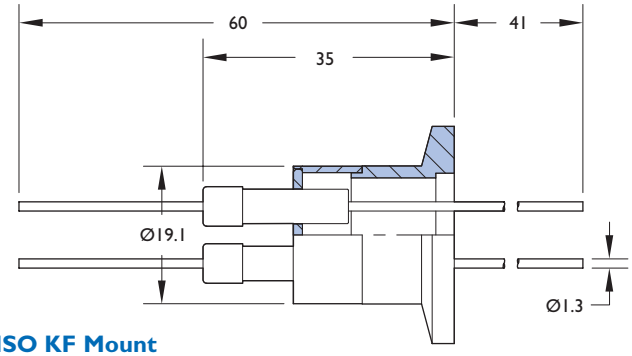
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

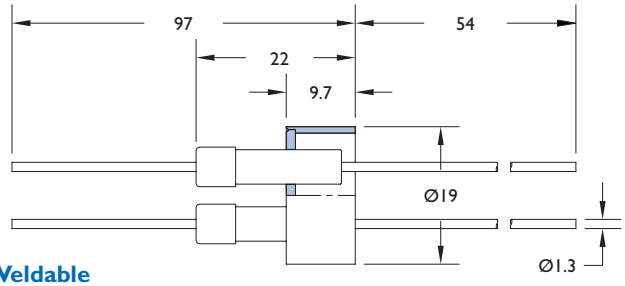
UHV and HV series



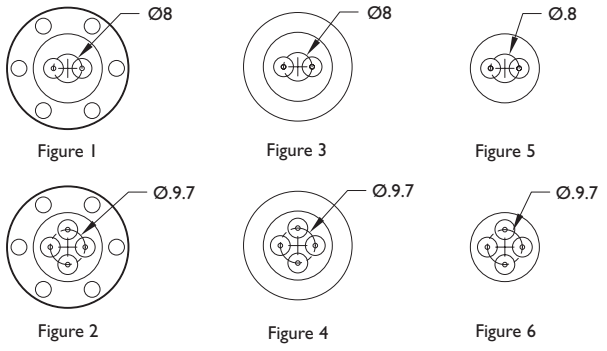
CF Mount



ISO KF Mount



Weldable



End view Air-side

All dimensions are nominal in millimetres unless specified

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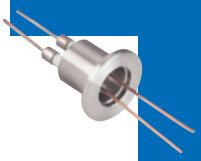
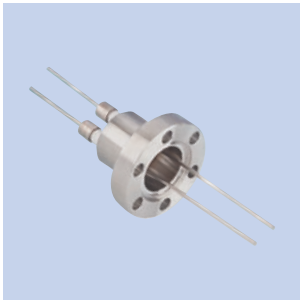
CABURN MDC EUROPE

Power Medium

5,000V / 15A / 2 and 4 pins



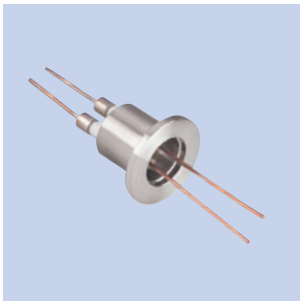
CF



No. of pins	Flange mount	End view figure	Amps	Conductor material	Reference	Part number
2	DN16CF	1	15	Copper	HV5-15C-2-C16	**9422010**
2	DN16CF	1	5	Nickel	HV5-5N-2-C16	**9422011**
2	DN16CF	1	1	Stainless steel	HV5-1S-2-C16	**9422012**
4	DN16CF	2	15	Copper	HV5-15C-4-C16	**9422025**
4	DN16CF	2	5	Nickel	HV5-5N-4-C16	**9422026**
4	DN16CF	2	1	Stainless steel	HV5-1S-4-C16	**9422027**

Connectors must be ordered separately

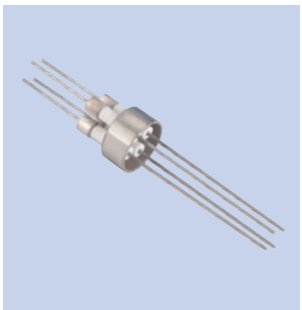
ISO KF



No. of pins	Flange mount	End view figure	Amps	Conductor material	Reference	Part number
2	DN16KF	3	15	Copper	HV5-15C-2-K16	**9423010**
2	DN16KF	3	5	Nickel	HV5-5N-2-K16	**9423011**
2	DN16KF	3	1	Stainless steel	HV5-1S-2-K16	**9423012**
4	DN16KF	2	15	Copper	HV5-15C-4-K16	**9423025**
4	DN16KF	2	5	Nickel	HV5-5N-4-K16	**9423026**
4	DN16KF	2	1	Stainless steel	HV5-1S-4-K16	**9423027**

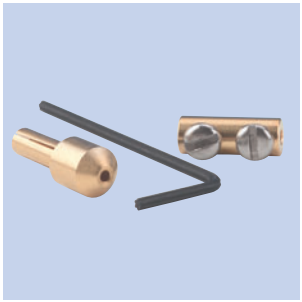
Connectors must be ordered separately

Weldable



No. of pins	Amps	Conductor material	End view figure	Reference	Part number
2	15	Copper	5	HV5-15C-2	**9421014**
2	5	Nickel	5	HV5-5N-2	**9421015**
2	1	Stainless steel	5	HV5-1S-2	**9421016**
4	15	Copper	6	HV5-15C-4	**9421017**
4	5	Nickel	6	HV5-5N-4	**9421018**
1	1	Stainless steel	6	HV5-1S-4	**9421019**

Accessories

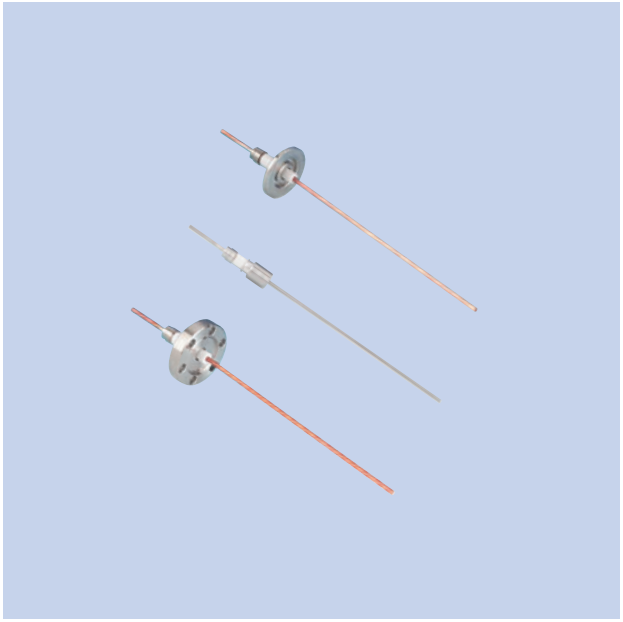


Accessory type	Material	Quantity per pack	Reference	Part number
Power in-line	BeCu	10	PIL-059	**9924004**
Ceramic bead	Alumina	300mm	CB050	**9951002**

All dimensions are nominal in millimetres unless specified

Power Medium

5,000V / to 30A / 1 to 8 pins



Features

- 1 and 8-pin construction
- Medium power
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

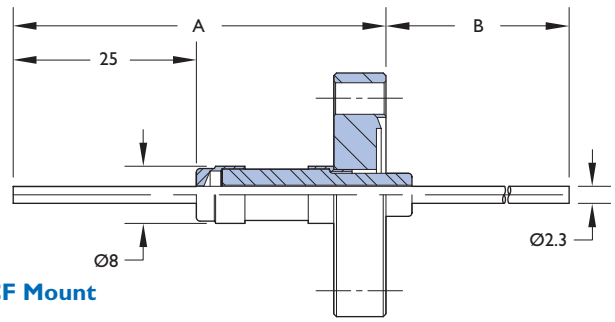
Specifications

Voltage[1]	5,000V DC
Current	to 30A
Material	
Flanges	304ss
Shell	304ss
Pins	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
Weldable feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Dimensions	Reference only, subject to change

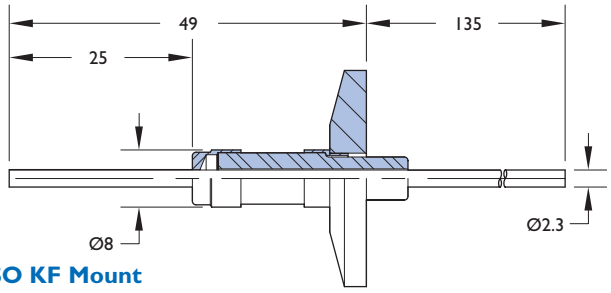
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

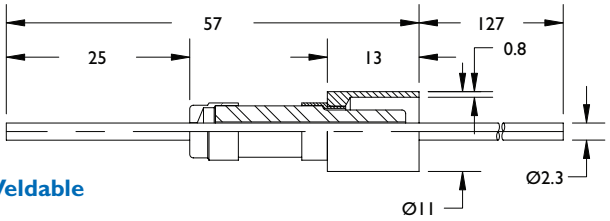
UHV and HV series



CF Mount



ISO KF Mount



Weldable

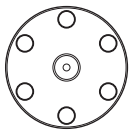


Figure 1

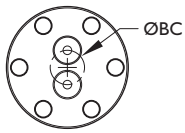


Figure 2

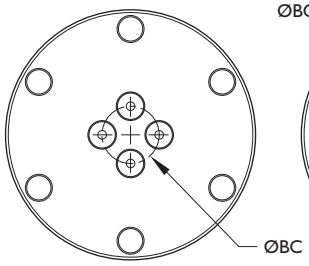


Figure 3

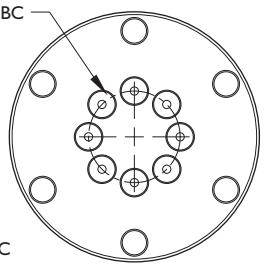


Figure 4

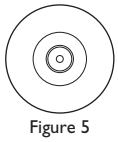


Figure 5

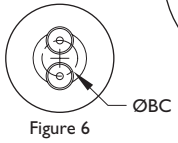


Figure 6

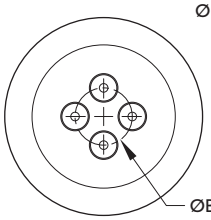


Figure 7

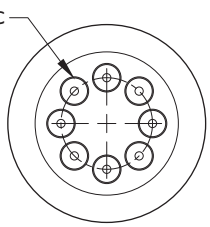


Figure 8

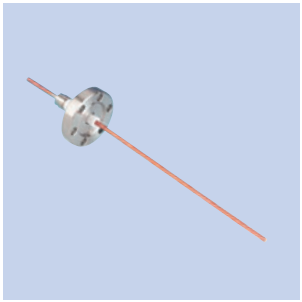
End view Air-side

All dimensions are nominal in millimetres unless specified

Power Medium

5,000V / to 30A / 1 to 8 pins

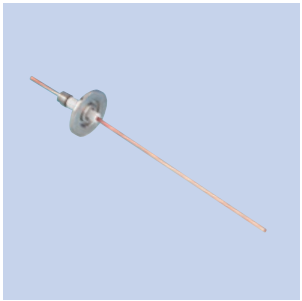
CF



No. of pins	Flange mount	End view figure	Amps	Conductor material	A	B	BC	Reference	Part number
1	DN16CF	1	30	Copper	52	132	–	HV5-30C-1-C16	**9422006**
1	DN16CF	1	15	Nickel	52	132	–	HV5-15N-1-C16	**9422007**
2	DN16CF	2	30	Copper	52	132	9.1	HV5-30C-2-C16	**9422013**
2	DN16CF	2	15	Nickel	52	132	9.1	HV5-15N-2-C16	**9422014**
2	DN40CF	2	30	Copper	57	127	12.7	HV5-30C-2-C40	**9422017**
2	DN40CF	2	15	Nickel	57	127	12.7	HV5-15N-2-C40	**9422018**
4	DN40CF	3	30	Copper	57	127	15.8	HV5-30C-4-C40	**9422028**
4	DN40CF	3	15	Nickel	57	127	15.8	HV5-15N-4-C40	**9422029**
8	DN40CF	4	30	Copper	57	127	25.4	HV5-30C-8-C40	**9422032**
8	DN40CF	4	15	Nickel	57	127	25.4	HV5-15N-8-C40	**9422033**

Connectors must be ordered separately

ISO KF



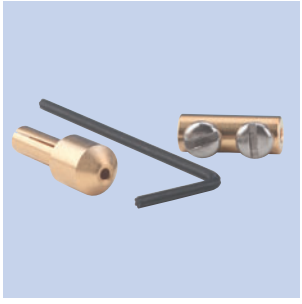
No. of pins	Flange mount	End view figure	Amps	Conductor material	BC	Reference	Part number
1	DN16KF	5	30	Copper	–	HV5-30C-1-K16	**9423006**
1	DN16KF	5	15	Nickel	–	HV5-15N-1-K16	**9423007**
2	DN16KF	6	30	Copper	9.1	HV5-30C-2-K16	**9423013**
2	DN16KF	6	15	Nickel	9.1	HV5-15N-2-K16	**9423014**
2	DN40KF	6	30	Copper	12.7	HV5-30C-2-K40	**9423017**
2	DN40KF	6	15	Nickel	12.7	HV5-15N-2-K40	**9423018**
4	DN40KF	7	30	Copper	15.8	HV5-30C-4-K40	**9423028**
4	DN40KF	7	15	Nickel	15.8	HV5-15N-4-K40	**9423029**
8	DN40KF	8	30	Copper	25.4	HV5-30C-8-K40	**9423032**
8	DN40KF	8	15	Nickel	25.4	HV5-15N-8-K40	**9423033**

Connectors must be ordered separately

Weldable

No. of pins	Amps	Conductor material	Mount diameter	Reference	Part number
1	30	Copper	$^{7}/_{16}$"	HV5-30C	**9421010**
1	15	Nickel	$^{7}/_{16}$"	HV5-15C	**9421011**

Accessories

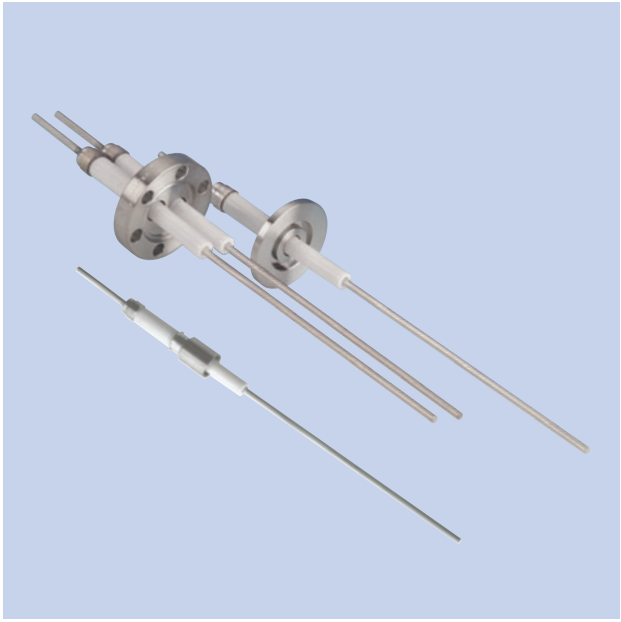


Accessory type	Material	Quantity per pack	Reference	Part number
Power push-on	BeCu	10	PPO-094	**9924003**
Power in-line	BeCu	10	PIL-120	**9924006**
Ceramic bead	Alumina	300mm	CB102	**9951003**

All dimensions are nominal in millimetres unless specified

Power Medium

10,000V / to 30A / 1 to 4 pins



Features

- 1 to 4-pin construction
- Medium power
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

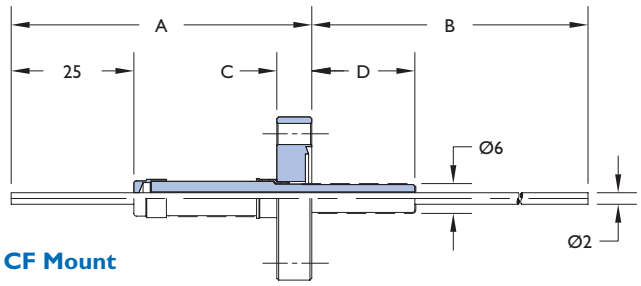
Specifications

Voltage[1]	10,000V DC
Current	to 30A
Material	
Flanges	304ss
Shell	304ss
Pins	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
Weldable feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Dimensions	Reference only, subject to change

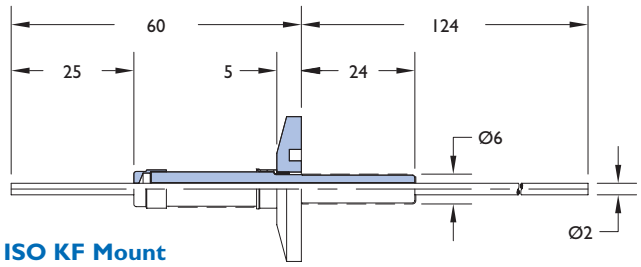
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

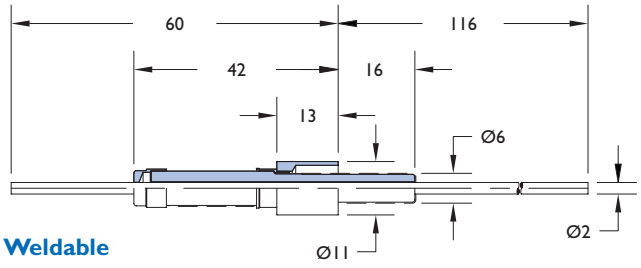
UHV and HV series



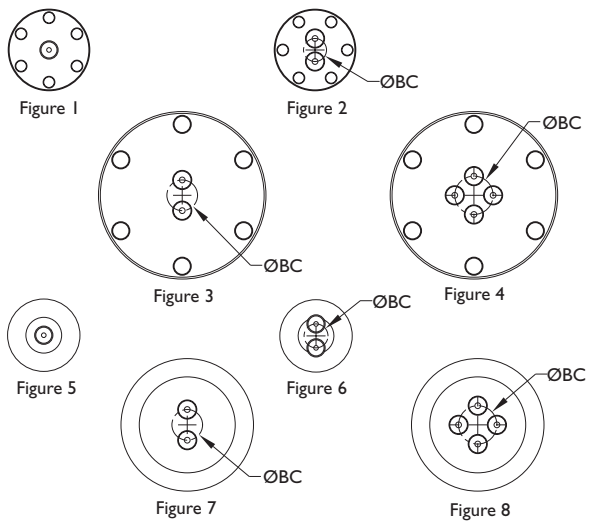
CF Mount



ISO KF Mount



Weldable



End view Air-side

All dimensions are nominal in millimetres unless specified

Power Medium

10,000V / to 30A / 1 to 4 pins

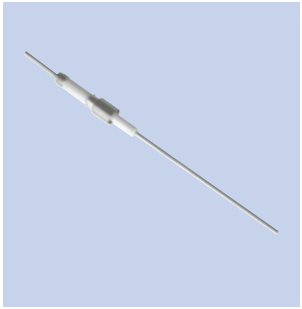
CF

No. of pins	Amps	Conductor material	Flange size	End view fig.	A	B	C	D	BC	Reference	Part number
1	30	Copper	DN16CF	1	62	122	7.4	21	–	HV10-15N-C16	**9432000**
1	15	Nickel	DN16CF	1	62	122	7.4	21	–	HV10-30C-C16	**9432001**
2	30	Copper	DN16CF	2	62	122	7.4	21	9.7	HV10-30C-2-C16	**9432004**
1	15	Nickel	DN16CF	2	62	122	7.4	21	9.7	HV10-15N-2-C16	**9432005**
2	30	Copper	DN40CF	3	68	117	12.7	12.7	12.7	HV10-30C-2-C40	**9432008**
2	15	Nickel	DN40CF	3	68	117	12.7	12.7	12.7	HV10-15N-2-C40	**9432009**
4	30	Copper	DN40CF	3	68	117	12.7	12.7	15.7	HV10-30C-4-C40	**9432012**
4	15	Nickel	DN40CF	3	68	117	12.7	12.7	15.7	HV10-15N-C40	**9432013**

ISO KF

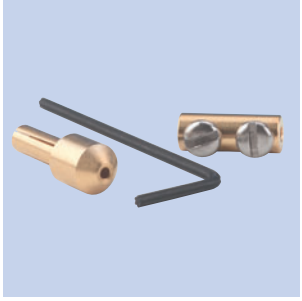
No. of pins	Amps	Conductor material	Flange size	End view figure	BC	Reference	Part number
1	30	Copper	DN16KF	5	–	HV10-30C-K16	**9433000**
1	15	Nickel	DN16KF	5	–	HV10-15N-K16	**9433001**
1	30	Copper	DN16KF	6	9.9	HV10-30C-2-K16	**9433004**
1	15	Nickel	DN16KF	6	9.9	HV10-15N-2-K16	**9433005**
1	30	Copper	DN40KF	7	12.7	HV10-30C-2-K40	**9433008**
1	15	Nickel	DN40KF	7	12.7	HV10-15N-2-K40	**9433009**
1	30	Copper	DN40KF	8	15.7	HV10-30C-4-K40	**9433012**
1	15	Nickel	DN40KF	8	15.7	HV10-15N-K40	**9433013**

Weldable



Volts	Amps	Conductor material	Mount diameter	Reference	Part number
10kV	30	Copper	$^{7}/_{16}$"	CHV12-30C	**9431001**
10kV	15	Nickel	$^{7}/_{16}$"	HV5-15N	**9431002**

Accessories

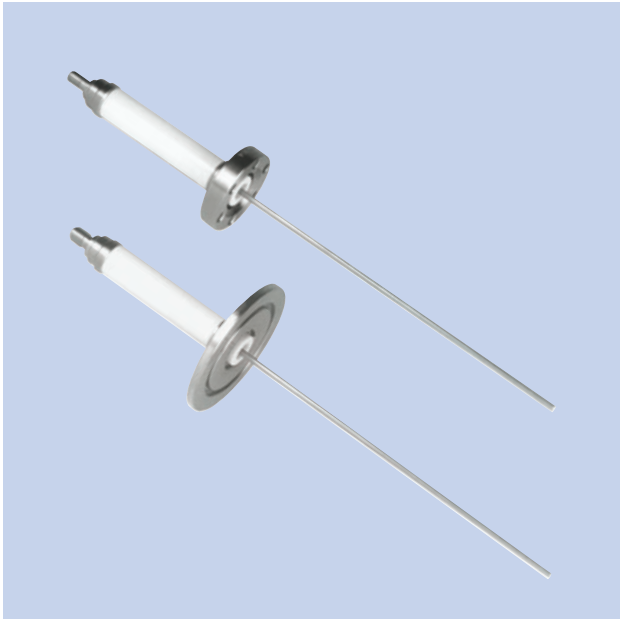


Accessory type	Material	Quantity per pack	Reference	Part number
Power push-on	BeCu	10	PPO-094	**9924003**
Power in-line	BeCu	10	PIL-120	**9924006**
Ceramic bead	Alumina	300mm	CB102	**9951003**

All dimensions are nominal in millimetres unless specified

Power High

20,000V / 150A / 1 pin



Features

- Single-pin construction
- High power
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

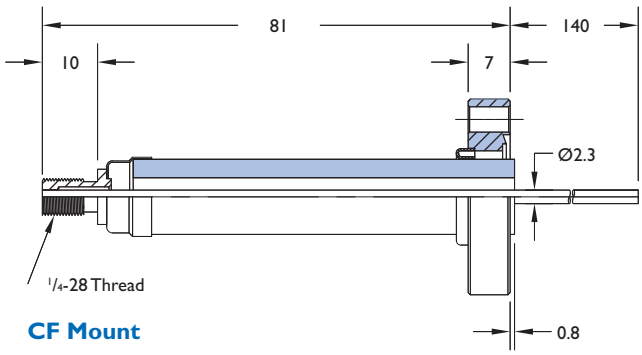
Specifications

Voltage[1]	20,000V DC
Current	15A
Material	
Flanges	304ss
Adaptor	304ss
Conductor	Nickel
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-100°C to 150°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

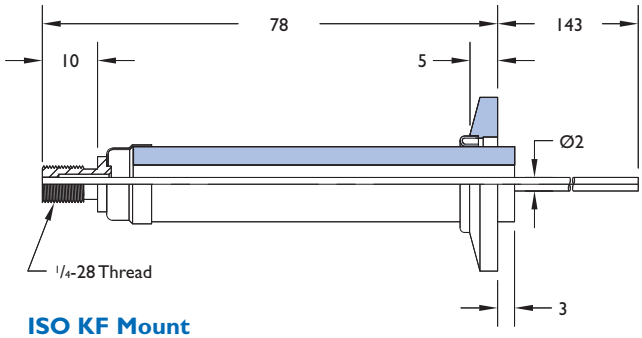
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

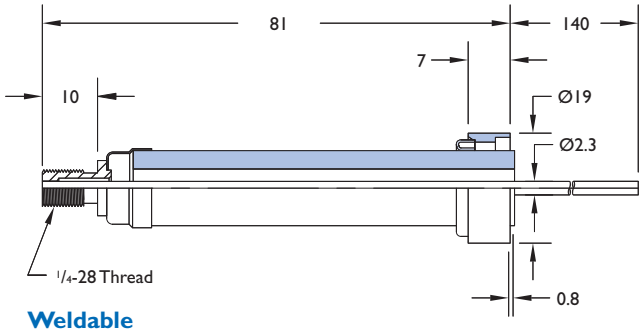
UHV and HV series



CF Mount



ISO KF Mount



Weldable

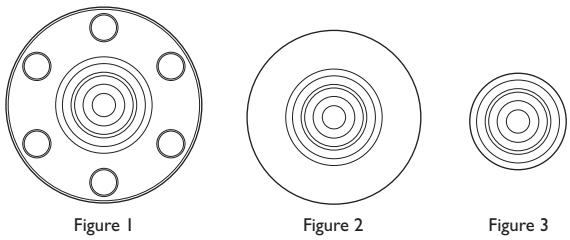


Figure 1 Figure 2 Figure 3

End view Air-side

All dimensions are nominal in millimetres unless specified

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Power High

20,000V / 150A / 1 pin

CF

Conductor material	Flange mount	End view figure	Reference	Part number
Nickel	DN16CF	2	HV2-15N-C16	**9442000**

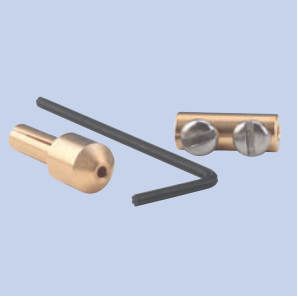
ISO KF

Conductor material	Flange mount	End view figure	Reference	Part number
Nickel	DN16KF	2	HV2-15N-K16	**9443000**

Weldable

Conductor material	End view figure	Reference	Part number
Nickel	3	HV2Q-15N	**9441000**

Accessories

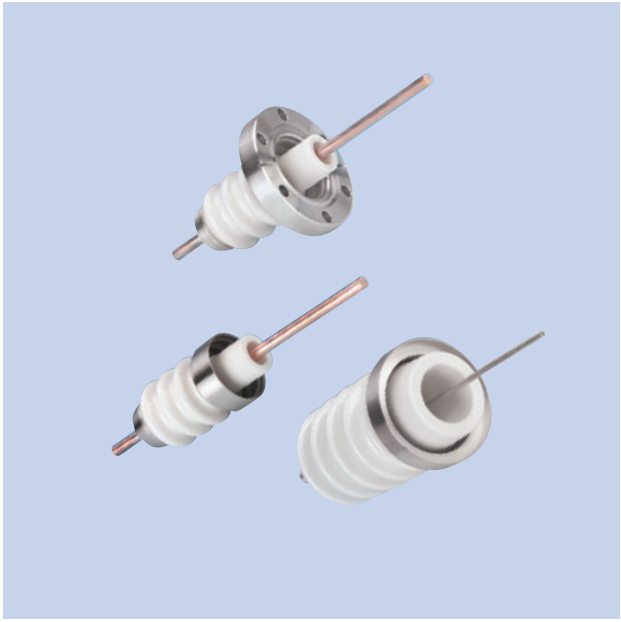


Accessory type	Material	Quantity per pack	Reference	Part number
Power push-on	BeCu	10	PPO-94	**9924003**
Power in-line	BeCu	10	PIL-12	**9924006**
Ceramic bead	Alumina	300mm	CB102	**9951003**

All dimensions are nominal in millimetres unless specified

Power High

20,000V / to 150A / 1 pin



Features

- Single-pin construction
- High power
- Solid pin configuration
- 2 different conductor materials available
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

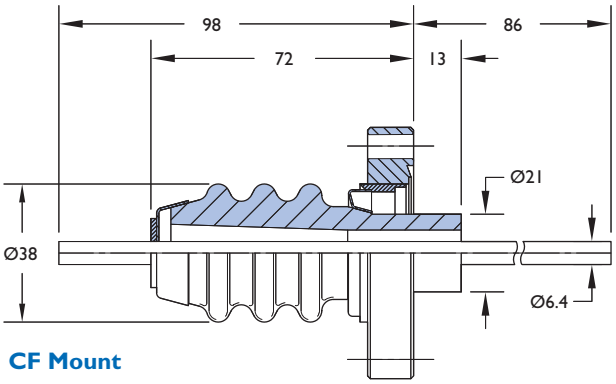
Specifications

Voltage[1]	20,000V DC
Current	75 to 150A
Material	
Flanges	304ss
Shell	304ss
Pins	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

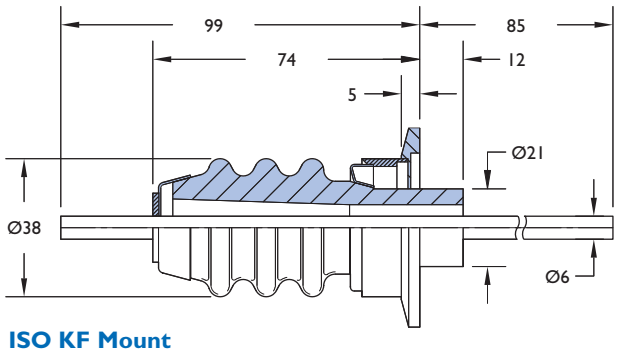
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

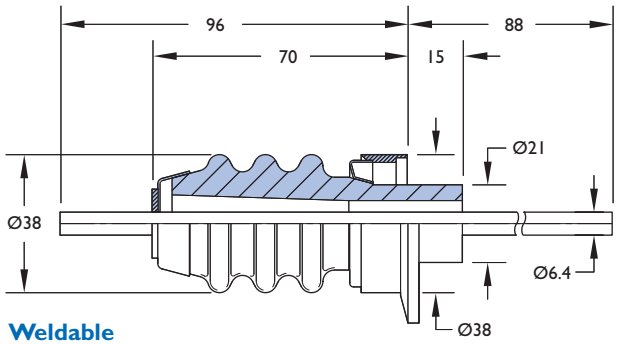
UHV and HV series



CF Mount



ISO KF Mount



Weldable

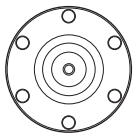


Figure 1

Figure 2

Figure 3

End view Air-side

All dimensions are nominal in millimetres unless specified

Power High

20,000V / to 150A / 1 pin

CF

Conductor material	Amps	Flange mount	End view figure	Reference	Part number
Copper	150	DN40CF	1	FHV20-150C-C40	**9442004**
Nickel	75	DN40CF	1	FHV20-75N-C40	**9442005**

Connectors must be ordered separately

ISO KF

Conductor material	Amps	Flange mount	End view figure	Reference	Part number
Copper	150	DN40KF	1	FHV20-150C-K40	**9443010**
Nickel	75	DN40KF	1	FHV20-75N-K40	**9443011**

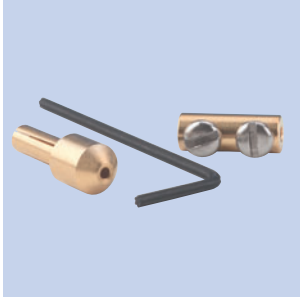
Connectors must be ordered separately

Weldable

Conductor material	Amps	End view figure	Reference	Part number
Copper	150	3	FHV20-150C	**9441004**
Nickel	75	3	FHV20-75N	**9441005**

Connectors must be ordered separately

Accessories

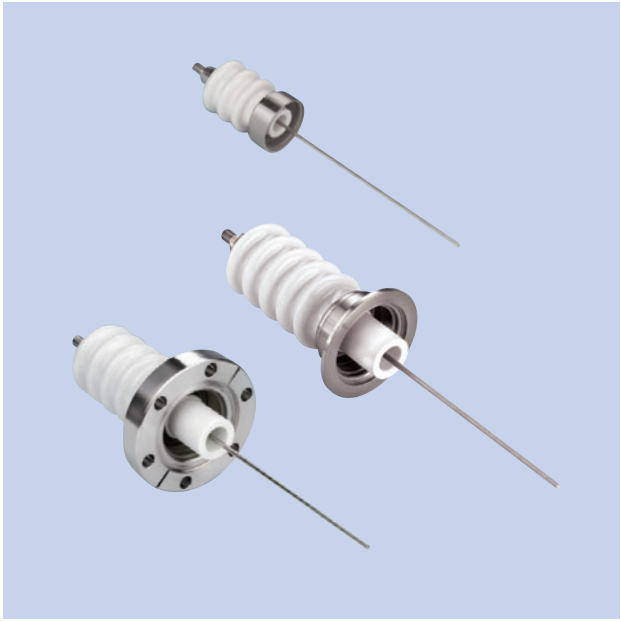


Accessory type	Material	Quantity per pack	Reference	Part number
Power push-on	BeCu	10	PPO-94	**9924003**
Power in-line	BeCu	10	PIL-120	**9924006**
Ceramic bead	Alumina	300mm	CB102	**9951003**

All dimensions are nominal in millimetres unless specified

Power High

20,000 to 30,000V / 1A / 1 pin



Features

- Single-pin construction
- High power
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

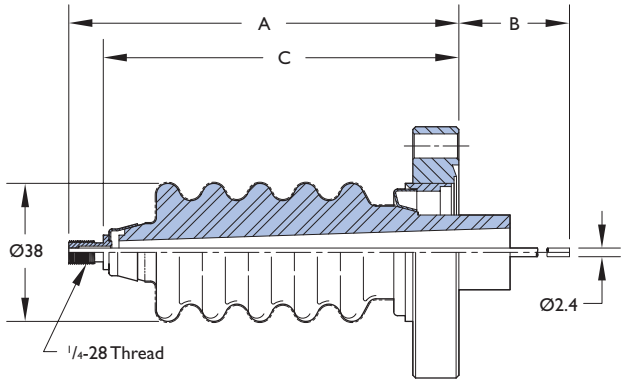
Specifications

Voltage[1]	to 30,000V DC
Current	1A
Material	
Flanges	304ss
Shell	304ss
Pins	Stainless steel
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

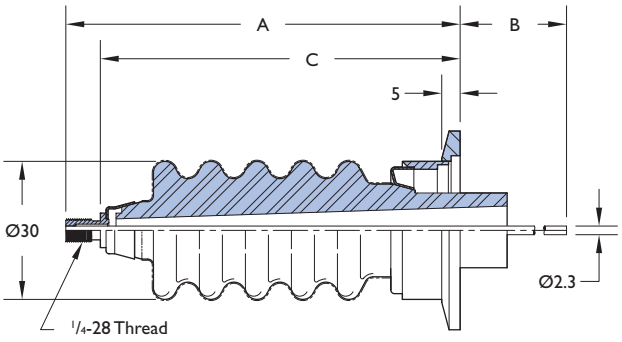
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

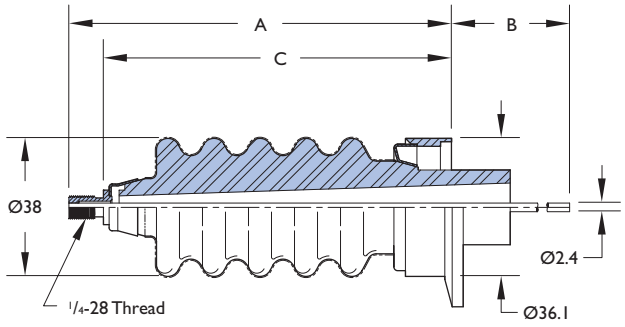
UHV and HV series



CF Mount



ISO KF Mount



Weldable

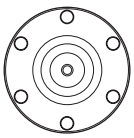


Figure 1

Figure 2

Figure 3

End view Air-side

All dimensions are nominal in millimetres unless specified

CF

Volts	Flange mount	End view figure	A	B	C	Reference	Part number
20kV	DN40CF	1	96	135	86	FHV20-1S-C40	**9442003**
25kV	DN40CF	1	108	122	99	FHV25-1S-C40	**9442002**
30kV	DN40CF	1	105	121	95	FHV30-1S-C40	**9442001**

Connectors must be ordered separately

ISO KF

Volts	Flange mount	End view figure	A	B	C	Reference	Part number
20kV	DN40KF	2	84	141	75	FHV20-1S-K40	**9443003**
25kV	DN40KF	2	97	128	87	FHV25-1S-K40	**9443002**
30kV	DN40KF	2	110	116	100	FHV30-1S-K40	**9443001**

Connectors must be ordered separately

Weldable

Volts	Flange mount	End view figure	A	B	C	Reference	Part number
20kV	DN40CF	1	96	135	86	FHV20-1S	**9441003**
25kV	DN40CF	1	108	122	99	FHV25-1S	**9441002**
30kV	DN40CF	1	105	121	95	FHV30-1S	**9441001**

Connectors must be ordered separately

All dimensions are nominal in millimetres unless specified

Power High

30,000 to 40,000V / 3A / 1 pin

Features

- Single-pin construction
- High voltage
- In-vacuum accessories available
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

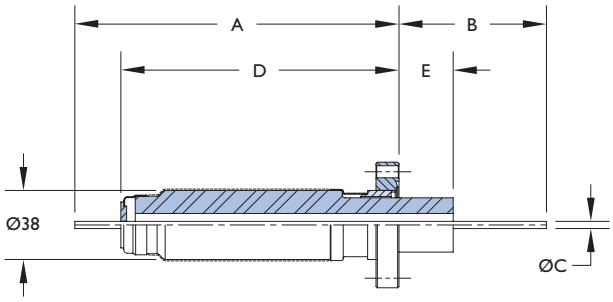
Specifications

Voltage[1]	30,000 – 40,000V DC
Current	to 3A
Material	
Flanges	304ss
Shell	304ss
Pins	Stainless steel
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

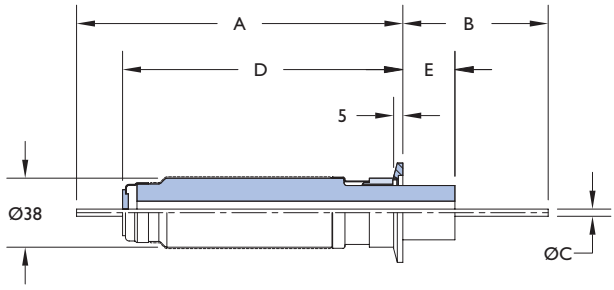
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

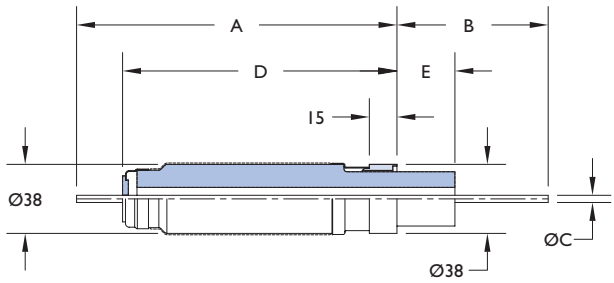
UHV Series



CF Mount



ISO KF Mount



Weldable

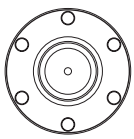


Figure 1

Figure 2

Figure 3

End view Air-side

All dimensions are nominal in millimetres unless specified

Power High

30,000 to 40,000V / 3A / 1 pin

CF

Flange mounts	Volts	Amps	A	B	C	D	E	Reference	Part number
DN40CF	30kV	1	179	81	2.4	154	30	HV30-1S-C40	**9442008**
DN40CF	30kV	3	179	81	3.9	154	30	HV30-3S-C40	**9442009**
DN40CF	40kV	1	217	100	2.4	192	49	HV40-1S-C40	**9442010**
DN40CF	40kV	3	217	100	3.9	192	49	HV40-3S-C40	**9442011**

Connectors must be ordered separately

ISO KF

Volts	Amps	Mount dia.	End view fig.	A	B	C	D	E	Reference	Part number
30kV	1	DN40KF	2	180	76	2.4	155	29	HV30-1S-K40	**9443006**
30kV	3	DN40KF	2	180	76	4	155	29	HV30-3S-K40	**9443007**
40kV	1	DN40KF	2	218	102	2.4	193	48	HV40-1S-K40	**9443008**
40kV	3	DN40KF	2	218	102	4	193	48	HV40-3S-K40	**9443009**

Connectors must be ordered separately

Weldable

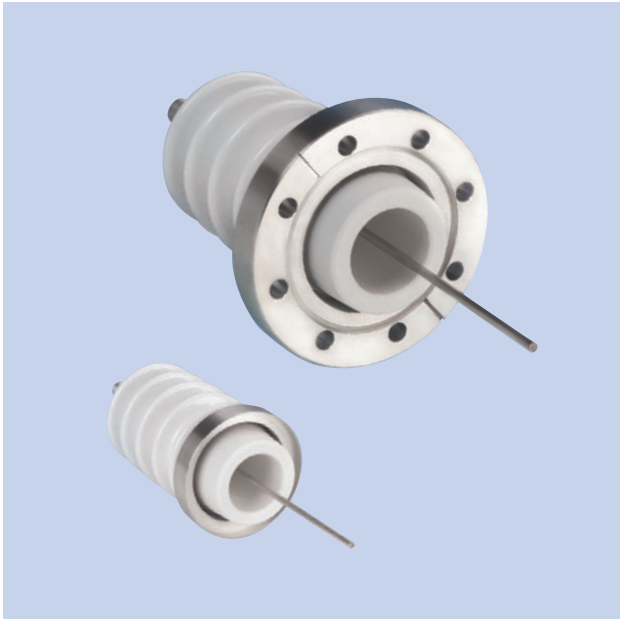
Volts	Amps	End view figure	A	B	C	D	E	Reference	Part number
30kV	1	3	177	84	8.4	151	32	HV30-1S	**9441008**
30kV	3	3	177	84	4	151	32	HV30-3S	**9441009**
40kV	1	3	215	103	8.4	184	51	HV40-1S	**9441010**
40kV	3	3	215	103	8.4	184	51	HV40-3S	**9441011**

Connectors must be ordered separately

All dimensions are nominal in millimetres unless specified

Power High

45,000 to 100,000V / 3A / 1 pin



Features

- Single-pin construction
- High power
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

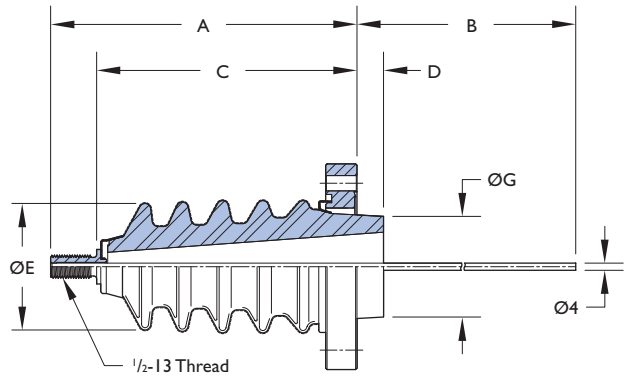
Specifications

Voltage[1]	45,000 –100,000V DC
Current	3A
Material	
Flanges	304ss
Shell	304ss
Pins	Stainless steel
Insulation	Alumina ceramic
Vacuum range UHV	1×10^{-10} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

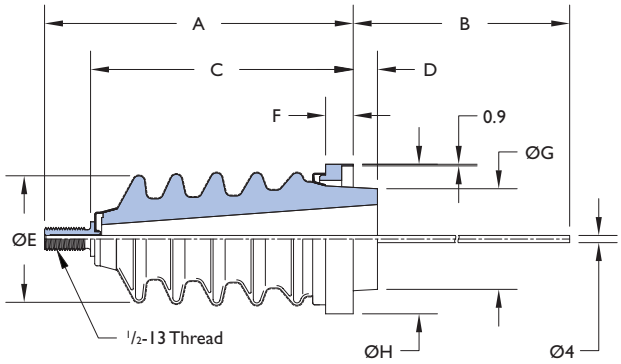
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

UHV Series



CF Mount



Weldable

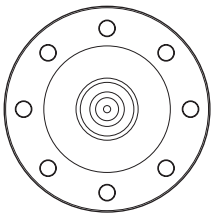


Figure 1

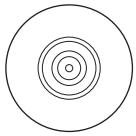


Figure 2

End view Air-side

All dimensions are nominal in millimetres unless specified

CF

Volts	Flange mount	A	B	C	D	E	G	Reference	Part number
45kV	DN63CF	169	136	144	15	70	56	FHV45-3S-C63	**9442012**
60kV	DN63CF	201	123	176	23	73	56	FHV60-3S-C63	**9442013**
100kV	DN100CF	280	139	255	37	89	66	FHV100-3S-C100	**9442014**

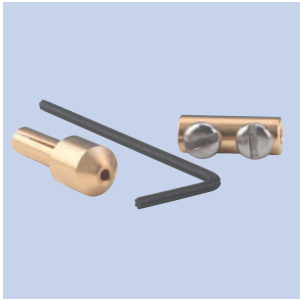
Connectors must be ordered separately

Weldable

Volts	End view fig.	A	B	C	D	E	F	G	H	Reference	Part number
45kV	2	170	115	145	13	70	15	56	83	FHV45-3S	**9441012**
60kV	2	142	123	228	21	73	15	56	83	FHV60-3S	**9441013**
100kV	2	278	142	252	41	89	14	66	95	FHV100-3S	**9441014**

Connectors must be ordered separately

Accessories



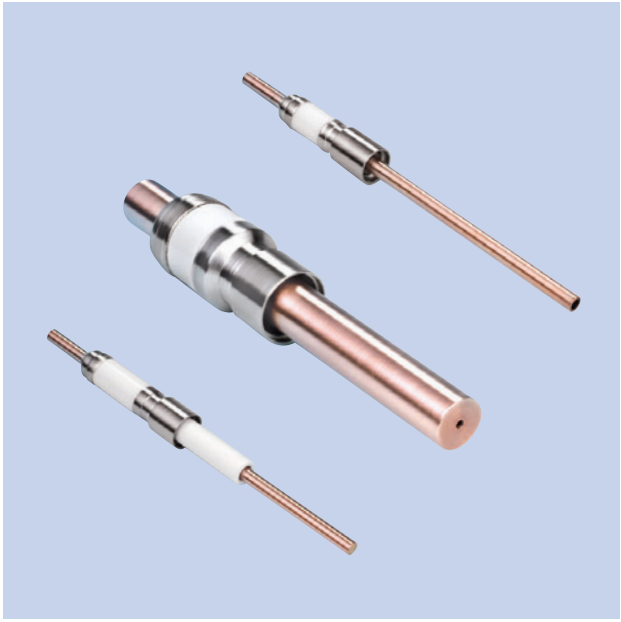
Accessory type	Material	See page	Quantity per pack	Reference	Part number
Power in-line	BeCu	189	10	PIL-260	**9924008**

Connectors must be ordered separately

All dimensions are nominal in millimetres unless specified

Power High

3,000 to 12,000V / to 600A / 1 pin



Features

- Single-pin construction
- High voltage
- High power
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- Custom feedthrough configurations available upon request

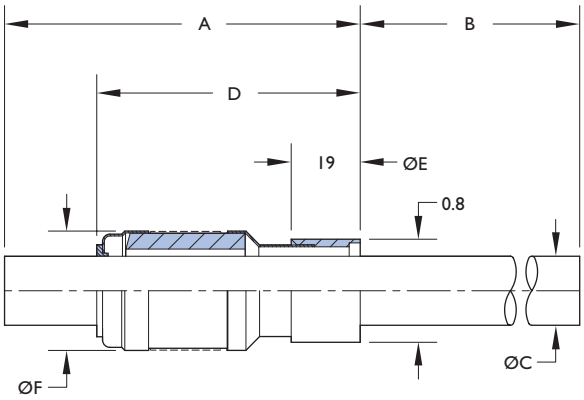
Specifications

Voltage[1]	3,000 – 12,000V DC
Current	to 600A
Material	
Shells	304ss
Adaptor	304ss
Conductor	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

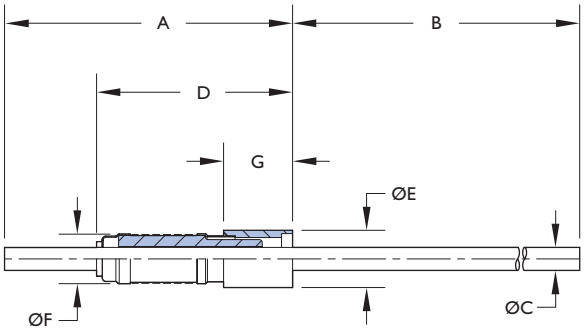
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

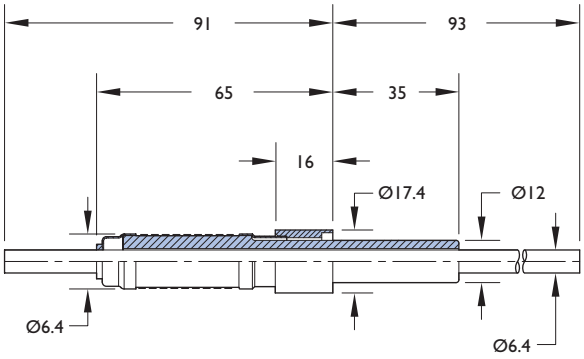
UHV and HV series



3,000V weldable



5,000V weldable



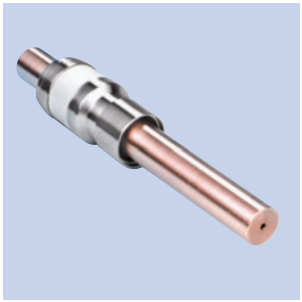
12,000V weldable

All dimensions are nominal in millimetres unless specified

Power High

3,000 to 12,000V / to 600A / 1 pin

Weldable 3kV



Amps	Conductor material	A	B	C	D	E	F	Reference	Part number
600	Copper	98	86	19	72	28.4	33	MC3-600C	**9451000**
250	Copper	81	103	10	56	18.9	20	MC3-250C	**9451001**

Connectors must be ordered separately

Weldable 5kV

Amps	Conductor material	A	B	C	D	E	F	G	Reference	Part number
150	Copper	79	105	6.4	54	15.8	14	19	MC5-150C	**9451002**
75	Nickel	79	105	6.4	54	15.8	14	19	MC5-75N	**9451003**
7	Stainless steel	79	105	6.4	54	15.8	14	19	MC5-7S	**9451004**
60	Copper	84	125	3.9	33	12.6	10	13	MC5-60C	**9451008**
40	Nickel	84	125	3.9	33	12.6	10	13	MC5-40N	**9451009**

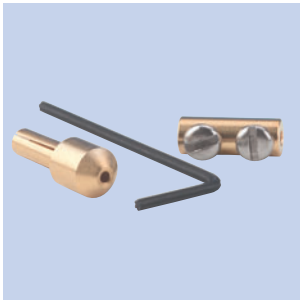
Connectors must be ordered separately

Weldable 12kV

Amps	Material	Reference	Part number
150	Copper	MC12-150C	**9451016**
75	Nickel	MC12-75N	**9451017**
7	Stainless steel	MC12-7S	**9451018**

Connectors must be ordered separately

Accessories



Accessory type	Material	Quantity per pack	Reference	Part number
Power in-line	BeCu	10	PIL-260	**9924008**
In-line clamp	Copper	1	IPLC	**991536**
Right-angle clamp	Copper	1	RAPC	**991537**

All dimensions are nominal in millimetres unless specified

Power High

3,000 to 12,000V / to 600A / 1 to 4 pins

Features

- Single pin configuration
- High voltage
- High power
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- Custom feedthrough configurations available upon request

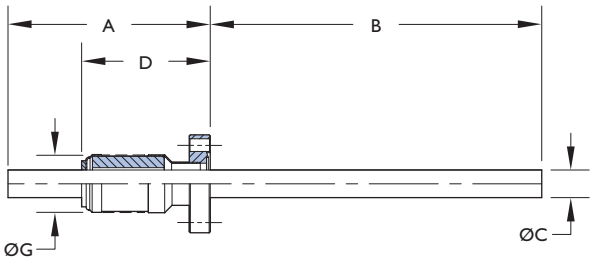
Specifications

Voltage[1]	3,000 – 12,000V DC
Current	7 to 600A
Material	
Flanges	304ss
Adaptor	304ss
Conductor	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV	1×10^{-10} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

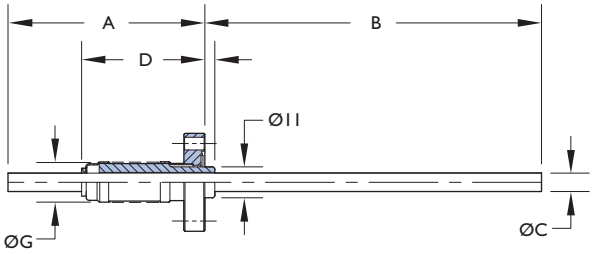
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

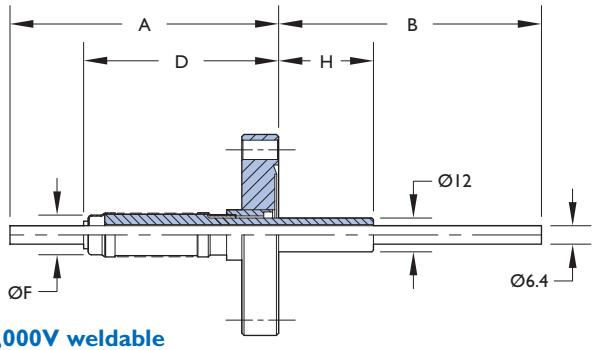
UHV Series



3,000V weldable



5,000V weldable



12,000V weldable

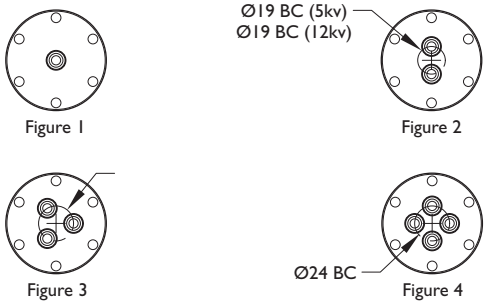


Figure 1 Figure 2 Figure 3 Figure 4

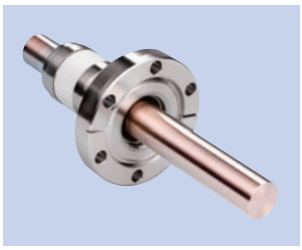
End view Air-side

All dimensions are nominal in millimetres unless specified

Power High

3,000 to 12,000V / to 600A / 1 to 4 pins

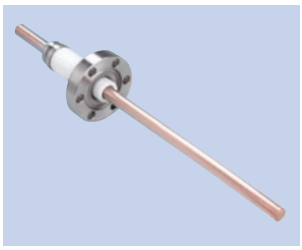
CF 3kV



No. of pins	Amps	Conductor material	Flange mount	End view fig.	A	B	C	D	G	Reference	Part number
1	600	Copper	DN40CF	1	99	85	19.1	74	33	MC3-600C-C40	9452000
1	250	Copper	DN16CF	1	68	117	9.7	42	20	MC3-250C-C16	9452001

Connectors must be ordered separately

CF 5kV



No. of pins	Amps	Conductor material	Flange mount	End view fig.	A	B	C	D	G	H	Reference	Part number
1	150	Copper	DN16CF	1	68	116	6.4	14	11	4	MC5-150C-C16	9452002
1	75	Nickel	DN16CF	1	68	116	6.4	14	11	4	MC5-75N-C16	9452003
1	7	Stainless steel	DN16CF	1	68	116	6.4	14	11	4	MC5-7S-C16	9452004
1	150	Copper	DN40CF	1	81	103	6.4	14	11	–	MC5-150C-C40	9452005
1	75	Nickel	DN40CF	1	81	103	6.4	14	11	–	MC5-75N-C40	9452006
1	7	Stainless steel	DN40CF	1	81	103	6.4	14	11	–	MC5-7S-C40	9452007
2	150	Copper	DN40CF	2	81	103	6.4	33	11	–	MC5-150C-2-C40	9452008
2	75	Nickel	DN40CF	2	81	103	6.4	33	11	–	MC5-75N-2-C40	9452009
2	7	Stainless steel	DN40CF	2	81	103	6.4	38	11	–	MC5-7S-2-C40	9452010
3	150	Copper	DN40CF	3	81	103	6.4	38	11	–	MC5-150C-3-C40	9452011
3	75	Nickel	DN40CF	3	81	103	6.4	38	11	–	MC5-75N-3-C40	9452012
3	7	Stainless steel	DN40CF	3	81	103	6.4	38	11	–	MC5-7S-3-C40	9452013
4	150	Copper	DN40CF	4	81	103	6.4	38	11	–	MC5-150C-4-C40	9452014
4	75	Nickel	DN40CF	4	81	103	6.4	38	11	–	MC5-75N-4-C40	9452015
4	7	Stainless steel	DN40CF	4	81	103	6.4	38	11	–	MC5-7S-4-C40	9452016

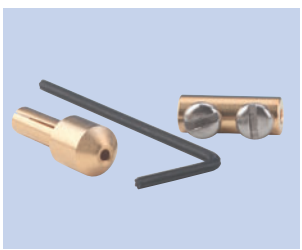
Connectors must be ordered separately

CF 12kV

No. of pins	Amps	Conductor material	Flange mount	End view fig.	A	B	D	F	H	Reference	Part number
1	150	Copper	DN16CF	1	83	102	57	15	43	MC12-150C-C16	9452017
1	75	Nickel	DN16CF	1	83	102	57	15	43	MC12-75N-C16	9452018
1	7	Stainless steel	DN16CF	1	83	102	57	15	43	MC12-7S-C16	9452019
1	150	Copper	DN40CF	1	92	82	66	15	34	MC12-150C-C40	9452020
1	75	Nickel	DN40CF	1	92	82	66	15	34	MC12-75N-C40	9452021
1	7	Stainless steel	DN40CF	1	92	82	66	15	34	MC12-7S-C40	9452022
2	150	Copper	DN40CF	2	92	82	66	35	34	MC12-150C-2-C40	9452023
2	75	Nickel	DN40CF	2	92	82	66	35	34	MC12-75N-2-C40	9452024
2	7	Stainless steel	DN40CF	2	92	82	66	35	34	MC12-7S-2-C40	9452025

Connectors must be ordered separately

Accessories



Accessory type	Material	Quantity per pack	Reference	Part number
Power in-line	BeCu	10	PIL-260	9924008
In-line clamp	Copper	1	IPLC	991536
Right-angle clamp	Copper	1	RAPC	991537

All dimensions are nominal in millimetres unless specified

Power High

3,000 to 5,000V / to 600A / 1 to 4 pins

Features

- 1 to 4 pin configuration
- High voltage
- High power
- Standard vacuum mounting style
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- Custom feedthrough configurations available upon request

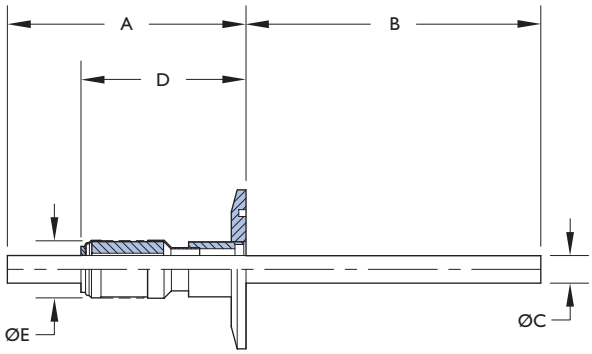
Specifications

Voltage[1]	3,000 – 5,000V DC
Current	to 600A
Material	
Flanges	304ss
Adaptor	304ss
Conductor	See tables for options
Insulation	Alumina ceramic
Vacuum range HV	1×10^{-4} mbar
Temperature range[2]	
ISO KF Flange	-20°C to 150°C
Dimensions	Reference only, subject to change

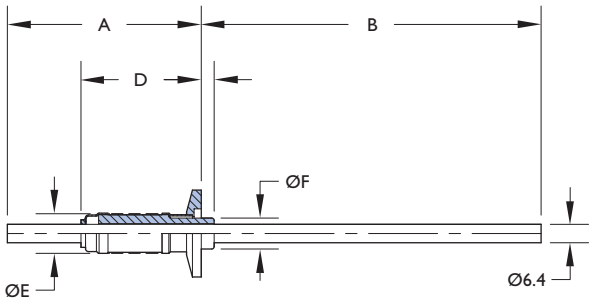
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

HV Series



3,000V ISO KF mount



5,000V ISO KF mount

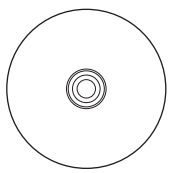


Figure 1

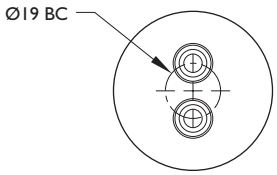


Figure 2

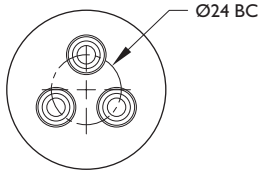


Figure 3

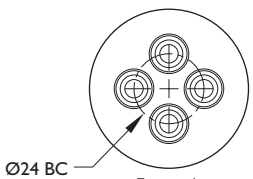


Figure 4

End view Air-side

All dimensions are nominal in millimetres unless specified

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Power High

3,000 to 5,000V / to 600A / 1 to 4 pins

ISO KF 3kV

No. of pins	Amps	Conductor material	Flange mount	End view fig.	A	B	C	D	E	Reference	Part number
1	600	Copper	DN40KF	1	98	86	19.1	72	33	MC3-600C-K40	**9453000**
1	250	Copper	DN40KF	1	80	104	9.7	55	20	MC3-250C-K40	**9453001**

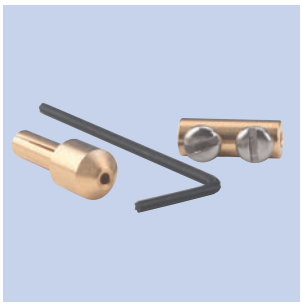
Connectors must be ordered separately

ISO KF 5kV

No. of pins	Amps	Conductor material	Flange mount	End view fig.	A	B	C	D	E	F	Reference	Part number
1	150	Copper	DN16KF	1	66	118	41	14	11	6	MC5-150C-K16	**9453002**
1	75	Nickel	DN16KF	1	66	118	41	14	11	6	MC5-75N-K16	**9453003**
1	7	Stainless steel	DN16KF	1	66	118	41	14	11	6	MC5-7S-K16	**9453004**
1	150	Copper	DN40KF	1	80	105	54	14	–	–	MC5-150C-K40	**9453005**
1	75	Nickel	DN40KF	1	80	105	54	14	–	–	MC5-75N-K40	**9453006**
1	7	Stainless steel	DN40KF	1	80	105	54	14	–	–	MC5-7S-K40	**9453007**
2	150	Copper	DN40KF	2	80	105	54	33	–	–	MC5-150C-2-K40	**9453008**
2	75	Nickel	DN40KF	2	80	105	54	33	–	–	MC5-75N-2-K40	**9453009**
2	7	Stainless steel	DN40KF	2	80	105	54	33	–	–	MC5-7S-2-K40	**9453010**
3	150	Copper	DN40KF	3	82	102	57	38	–	–	MC5-150C-3-K40	**9453011**
3	75	Nickel	DN40KF	3	82	102	57	38	–	–	MC5-75N-3-K40	**9453012**
3	7	Stainless steel	DN40KF	3	82	102	57	38	–	–	MC5-7S-3-K40	**9453013**
4	150	Copper	DN50KF	4	80	105	54	38	–	–	MC5-150C-4-K50	**9453014**
4	75	Nickel	DN50KF	4	80	105	54	38	–	–	MC5-75N-4-K50	**9453015**
4	7	Stainless steel	DN50KF	4	80	105	54	38	–	–	MC5-7S-4-K50	**9453016**

Connectors must be ordered separately

Accessories

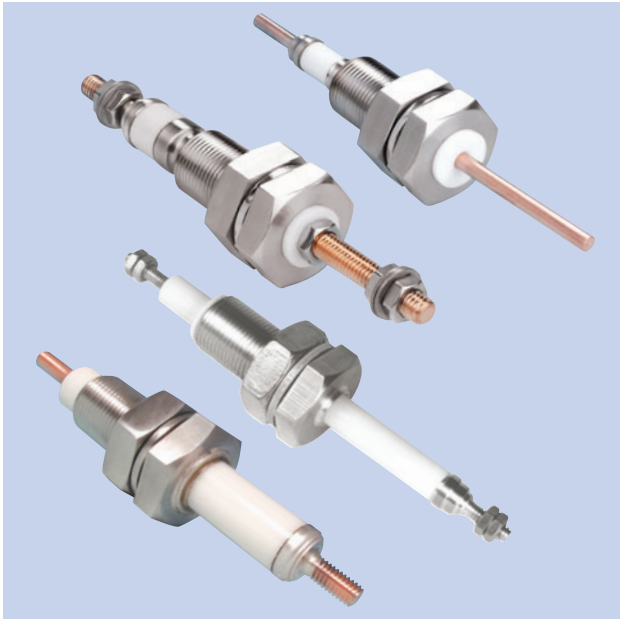


Accessory type	Material	Quantity per pack	Reference	Part number
Power in-line	BeCu	10	PIL-260	**9924008**
In-line clamp	Copper	1	IPLC	**991536**
Right-angle clamp	Copper	1	RAPC	**991537**

All dimensions are nominal in millimetres unless specified

Power High

3,000 to 15,000V / to 250A / 1 pin



Features

- Single-pin configuration
- High voltage
- High power
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- Baseplate mounting style
- Custom feedthrough configurations available upon request

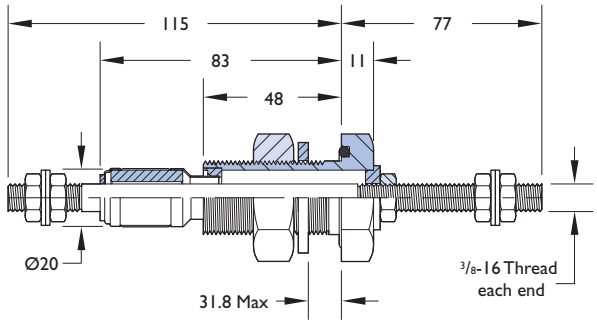
Specifications

Voltage[1]	3,000 – 15,000V DC
Current	5 to 250A
Material	
Baseplate	304ss
Conductor	See tables for options
Insulation	Alumina ceramic
Vacuum range HV	1×10^{-8} mbar
Temperature range[2]	
Baseplate	-20°C to 150°C
Dimensions	Reference only, subject to change

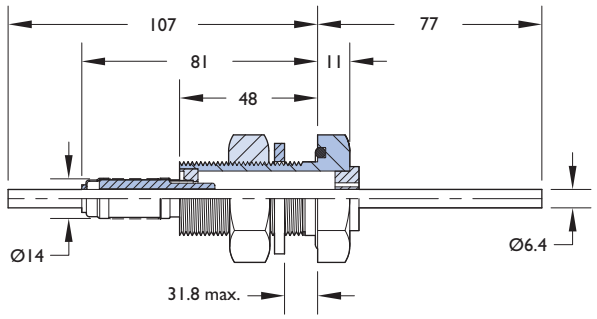
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

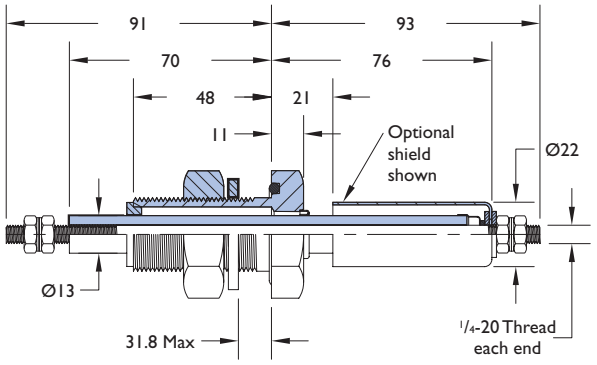
HV Series



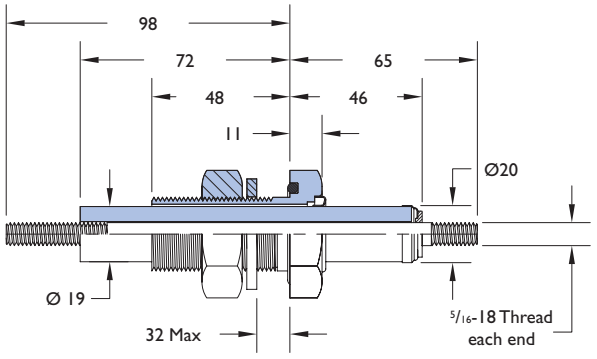
3kV Baseplate mount



5kV Baseplate mount



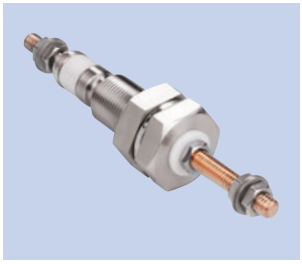
12kV Baseplate mount



15kV Baseplate mount

All dimensions are nominal in millimetres unless specified

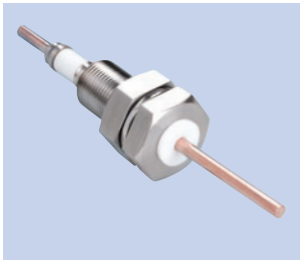
Baseplate 3kV



Volts	Amps	Conductor material	Reference	Part number
3kV	250	Copper	250C-B1	**9454001**

Connectors must be ordered separately

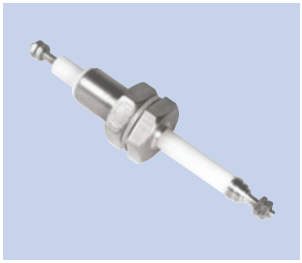
Baseplate 5kV



Volts	Amps	Conductor material	Reference	Part number
5kV	100	Copper	100C-B1	**9454002**
5kV	50	Nickel	50N-B1	**9454003**
5kV	5	Stainless steel	5S-B1	**9454004**

Connectors must be ordered separately

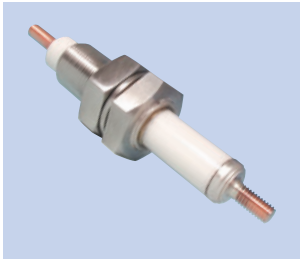
Baseplate 12kV



Volts	Amps	Conductor material	Type	Reference	Part number
12kV	100	Copper	Exposed	100C-B12-E	**9454005**
12kV	100	Copper	Shielded	100C-B12-S	**9454008**

Connectors must be ordered separately

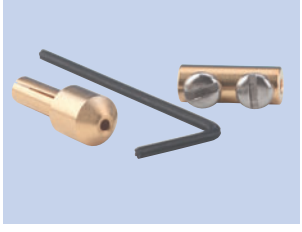
Baseplate 15kV



Volts	Amps	Conductor material	Reference	Part number
15kV	150	Copper	150C-B15	**9454015**

Connectors must be ordered separately

Accessories

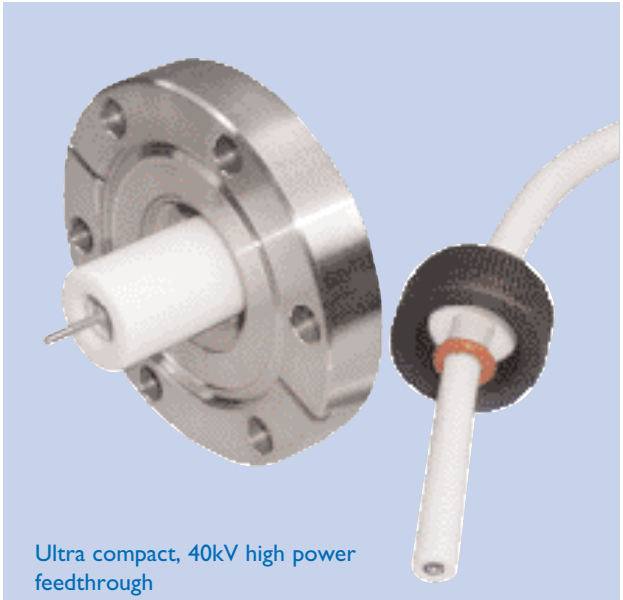


Accessory type	Material	Quantity per pack	Reference	Part number
Power in-line	BeCu	10	PIL-260	**9924008**
In-line clamp	Copper	1	IPLC	**991536**
Right-angle clamp	Copper	1	RAPC	**991537**

All dimensions are nominal in millimetres unless specified

Power High

40,000V / to 7A / 1 pin



Ultra compact, 40kV high power feedthrough

Description

Ultra-compact size and safe atmospheric side connectivity make the new, high-voltage, 40kV feedthrough the bench mark for the future of high power feedthroughs.

Features

- Atmospheric side connector and 9.5m long cable included
- Single-pin configuration
- High voltage for lower-power applications
- Custom feedthrough configurations available upon request

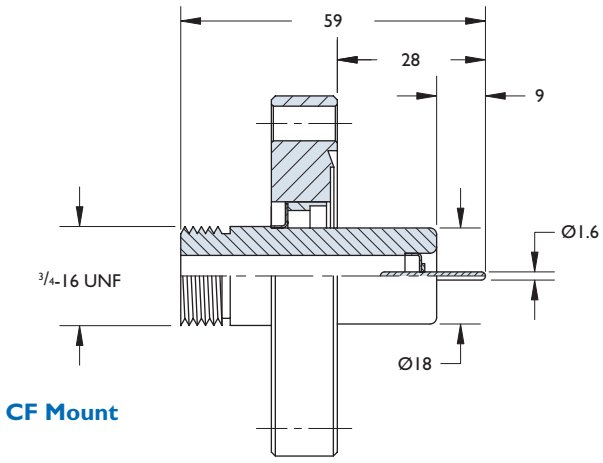
Specifications

Voltage[1]	40,000V DC
Current	to 7A
Material	
Flanges	304ss
Adaptor	304ss
Conductor	Alumel®
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Connector	-55°C to 125°C
Dimensions	Reference only, subject to change

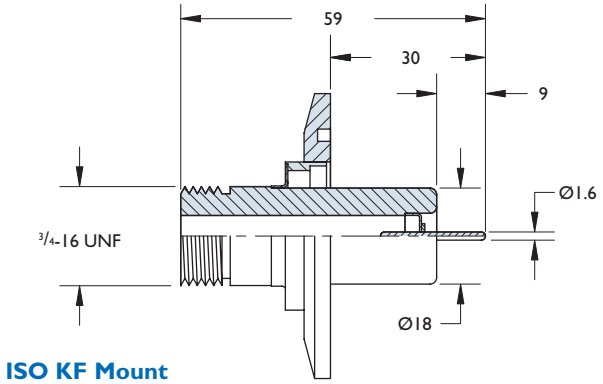
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

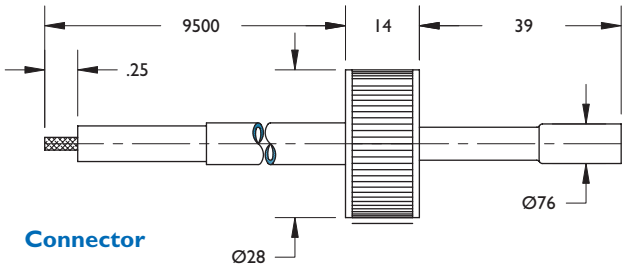
UHV and HV series



CF Mount



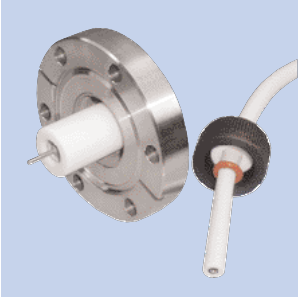
ISO KF Mount



Connector

All dimensions are nominal in millimetres unless specified

Ultra compact 40kV

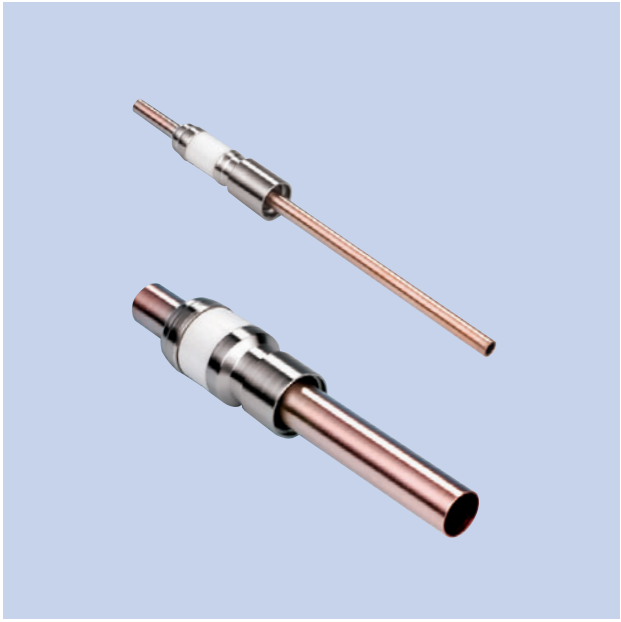


Description	Length	Reference	Part number
DN40CF		UCHP-40	**9442015**
DN40KF		UCHP-K40	**9443012**
DN50KF		UCHP-K50	**9443013**
Connector	9.5m	UCHP-CON	**9924076**

All dimensions are nominal in millimetres unless specified

Power Water-cooled

3,000 to 5,000V / 1 pin



Features

- Single-pin configuration – tubular construction
- Medium power
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- Custom feedthrough configurations available upon request

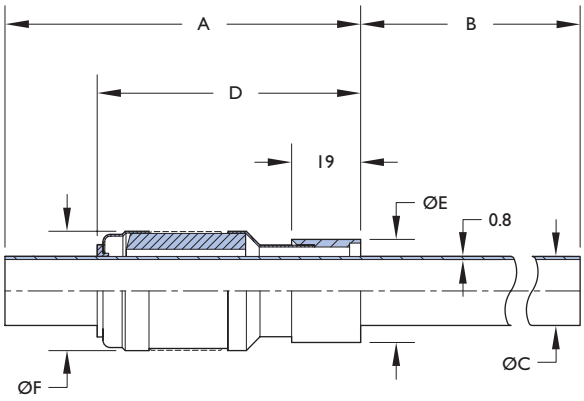
Specifications

Voltage[1]	3,000 – 5,000V DC
Current	See page 348
Material	
Shells	304ss
Adaptor	304ss
Conductor	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
Weldable	-100°C to 450°C
Dimensions	Reference only, subject to change

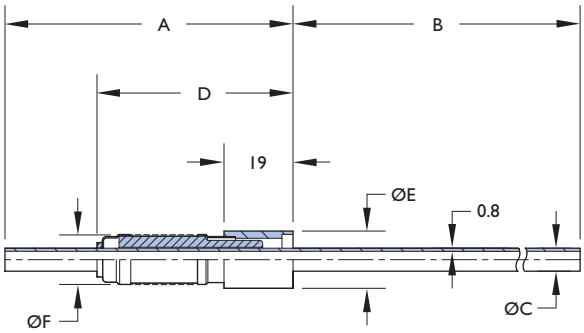
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

UHV and HV series



3,000V weldable



5,000V weldable

All dimensions are nominal in millimetres unless specified

Power Water-cooled

3,000 to 5,000V / 1 pin

Weldable 3kV

Conductor material	A	B	C	D	E	F	Reference	Part number
Copper	98	86	19.1	72	28	33	MCT3-CL	**9461000**
Copper	80	104	9.7	55	19	20	MCT3-C	**9461001**

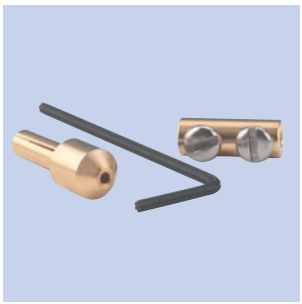
Connectors must be ordered separately

Weldable 5kV

Conductor material	A	B	C	D	E	F	Reference	Part number
Copper	79	105	6.4	54	15.8	14	MCT-C	**9461002**
Nickel	79	105	6.4	54	15.8	14	MCT-N	**9461003**
Stainless steel	79	105	6.4	54	15.8	14	MCT-S	**9461004**

Connectors must be ordered separately

Accessories



Accessory type	Material	Quantity per pack	Reference	Part number
In-line clamp	Copper	1	IPLC	**991536**
Right-angle clamp	Copper	1	RAPC	**991537**

All dimensions are nominal in millimetres unless specified

Power Water-cooled

3,000 to 5,000V / 1 to 4 pins

Features

- 1 to 4 pin configuration – tubular construction
- Medium power
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- Standard vacuum mounting style
- Custom feedthrough configurations available upon request

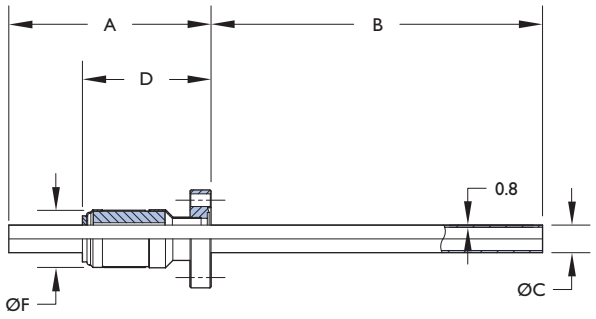
Specifications

Voltage[1]	3,000 – 5,000V DC
Current	See page 348
Material	
Shells	304ss
Adaptor	304ss
Conductor	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV	1×10^{-10} mbar
Temperature range[2]	
CF Flange mounted	-100°C to 450°C
Dimensions	Reference only, subject to change

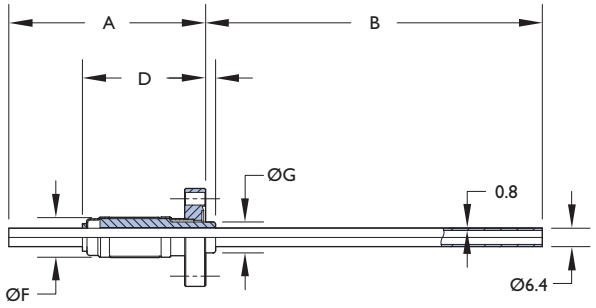
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

UHV Series



3,000V CF mount



5,000V CF mount

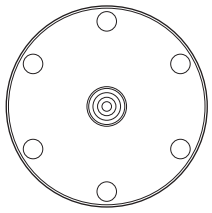


Figure 1

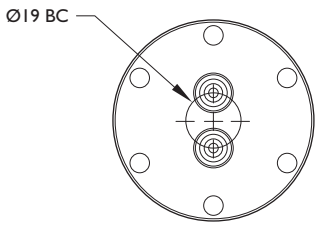


Figure 2

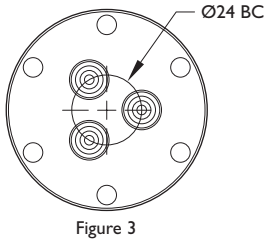


Figure 3

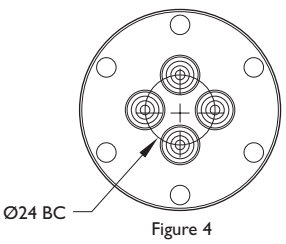


Figure 4

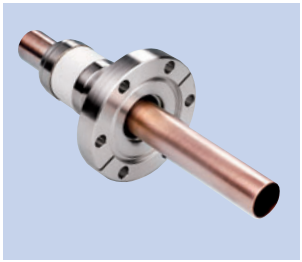
End view Air-side

All dimensions are nominal in millimetres unless specified

Power Water-cooled

3,000 to 5,000V / 1 to 4 pins

CF 3kV



No. of pins	Conductor material	Flange mount	End view figure	A	B	C	D	E	Reference	Part number
1	Copper	DN40CF	1	99	85	19.1	74	33	MCT3-C600-C40	**9462000**
1	Copper	DN16CF	1	68	116	9.7	43	20	MCT3-C600-C16	**9462001**

Connectors must be ordered separately

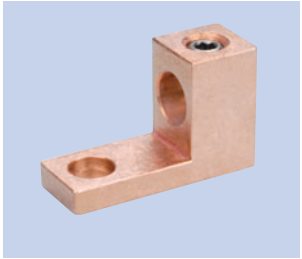
CF 5kV

No. of pins	Conductor material	Flange mount	End view figure	A	B	D	F	G	H	Reference	Part number
1	Copper	DN16CF	1	68	116	42	14	11	4	MCT-C-C16	**9462002**
1	Nickel	DN16CF	1	68	116	42	14	11	4	MCT-N-C16	**9462003**
1	Stainless steel	DN16CF	1	68	116	42	14	11	4	MCT-S-C16	**9462004**
1	Copper	DN40CF	1	81	103	55	14	–	–	MCT-C-C40	**9462005**
1	Nickel	DN40CF	1	81	103	55	14	–	–	MCT-N-C40	**9462006**
1	Stainless steel	DN40CF	1	81	103	55	14	–	–	MCT-S-C40	**9462007**
2	Copper	DN40CF	2	81	103	55	33	–	–	MCT-C-2-C40	**9462008**
2	Nickel	DN40CF	2	81	103	55	33	–	–	MCT-N-2-C40	**9462009**
2	Stainless steel	DN40CF	2	81	103	55	33	–	–	MCT-S-2-C40	**9462010**
3	Copper	DN40CF	3	81	103	55	38	–	–	MCT-C-3-C40	**9462011**
3	Nickel	DN40CF	3	81	103	55	38	–	–	MCT-N-3-C40	**9462012**
3	Stainless steel	DN40CF	3	81	103	55	38	–	–	MCT-S-3-C40	**9462013**
4	Copper	DN40CF	4	81	103	55	38	–	–	MCT-C-4-C40	**9462014**
4	Nickel	DN40CF	4	81	103	55	38	–	–	MCT-N-4-C40	**9462015**
4	Stainless steel	DN40CF	4	81	103	55	38	–	–	MCT-S-4-C40	**9462016**

Connectors must be ordered separately

Accessories

RAPC



IPLC

Accessory type	Material	Quantity per pack	Reference	Part number
In-line clamp	Copper	1	IPLC	**991536**
Right angle clamp	Copper	1	RAPC	**991537**

All dimensions are nominal in millimetres unless specified

Power Water-cooled

3,000 to 5,000V / 1 to 4 pins

Features

- 1 to 4 pin configuration – tubular construction
- Medium power
- 3 different conductor materials available
- In-vacuum accessories available – see section 6.7
- Standard vacuum mounting style
- Custom feedthrough configurations available upon request

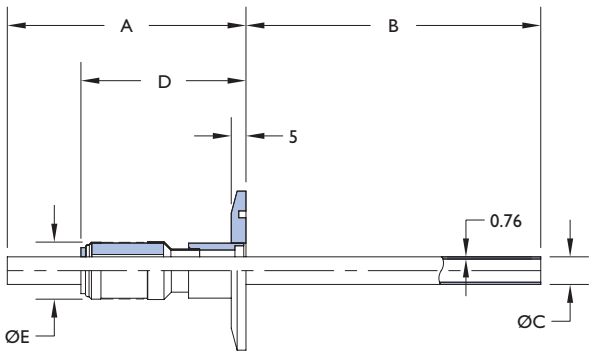
Specifications

Voltage[1]	3,000 – 5,000V DC
Current	See page 348
Material	
Shells	304ss
Adaptor	304ss
Conductor	See tables for options
Insulation	Alumina ceramic
Vacuum range HV	1×10^{-8} mbar
Temperature range[2]	
ISO KF Flange mounted feedthrough	-20°C to 150°C
Dimensions	Reference only, subject to change

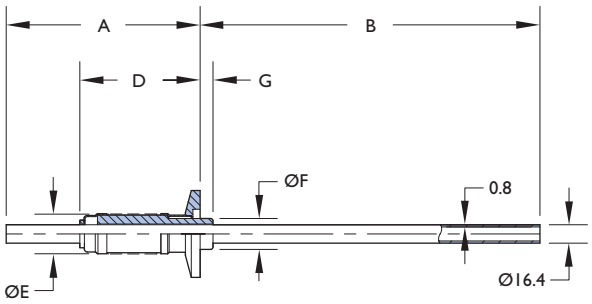
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

HV Series



3,000V ISO KF mount



5,000V ISO KF mount

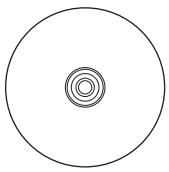


Figure 1

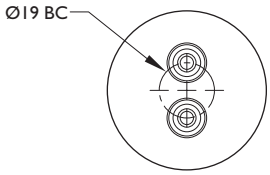


Figure 2

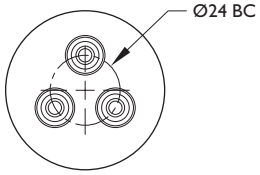


Figure 3

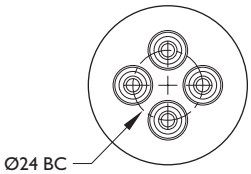


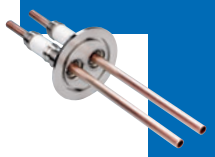
Figure 4

End view Air-side

All dimensions are nominal in millimetres unless specified

Power Water-cooled

3,000 to 5,000V / 1 to 4 pins

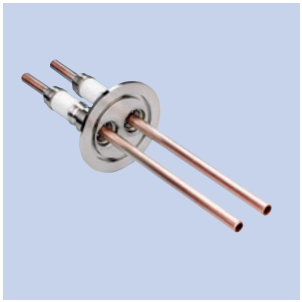


ISO KF 3kV

No. of pins	Amps	Conductor material	Flange mount	End view figure	A	B	D	E	F	G	Reference	Part number
1	3kV	Copper	DN16KF	1	99	85	19	73	13	33	MCT3-C-K40	**9463000**
1	3kV	Copper	DN16KF	1	6	102	9	57	7	20	MCT3-CL-K40	**9463001**

For connectors use a high current electrical clamp terminal

CF 5kV

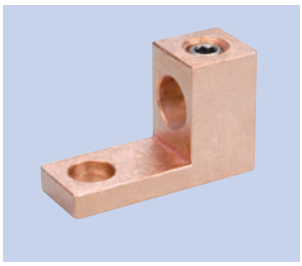


No. of pins	Amps	Conductor material	Flange mount	End view figure	A	B	D	E	F	G	Reference	Part number
1	5kV	Copper	DN16KF	1	66	118	41	14	11	6	MCT-C-K16	**9463002**
1	5kV	Nickel	DN16KF	1	66	118	41	14	11	6	MCT-N-K16	**9463003**
1	5kV	Stainless steel	DN16KF	1	66	118	41	14	11	6	MCT-S-K16	**9463004**
1	5kV	Copper	DN40KF	1	80	105	54	14	–	–	MCT-C-K40	**9463005**
1	5kV	Nickel	DN40KF	1	80	105	54	14	–	–	MCT-N-K40	**9463006**
1	5kV	Stainless steel	DN40KF	1	80	105	54	14	–	–	MCT-S-K40	**9463007**
2	5kV	Copper	DN40KF	2	80	105	54	33	–	–	MCT-C-2-K40	**9463008**
2	5kV	Nickel	DN40KF	2	80	105	54	33	–	–	MCT-N-2-K40	**9463009**
2	5kV	Stainless steel	DN40KF	2	80	105	54	33	–	–	MCT-S-2-K40	**9463010**
3	5kV	Copper	DN40KF	3	82	102	57	38	–	–	MCT-C-3-K40	**9463011**
3	5kV	Nickel	DN40KF	3	82	102	57	38	–	–	MCT-N-3-K40	**9463012**
3	5kV	Stainless steel	DN40KF	3	82	102	57	38	–	–	MCT-S-3-K40	**9463013**
4	5kV	Copper	DN50KF	4	80	105	54	38	–	–	MCT-C-4-K50	**9463014**
4	5kV	Nickel	DN50KF	4	80	105	54	38	–	–	MCT-N-4-K50	**9463015**
4	5kV	Stainless steel	DN50KF	4	80	105	54	38	–	–	MCT-S-4-K50	**9463016**

For connectors use a high current electrical clamp terminal

Accessories

RAPC

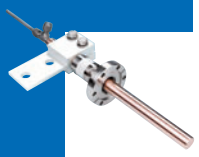


IPLC

Accessory type	Material	Quantity per pack	Reference	Part number
In-line clamp	Copper	1	IPLC	**991536**
Right-angle clamp	Copper	1	RAPC	**991537**

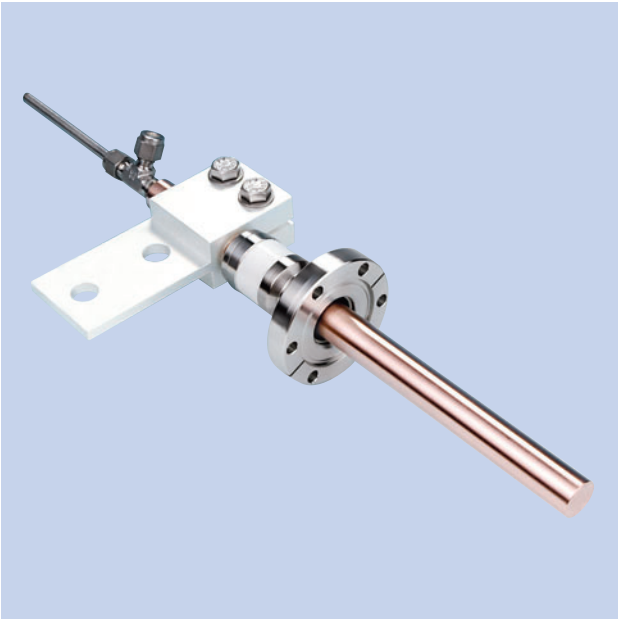
For connectors use a high-current electrical clamp terminal

All dimensions are nominal in millimetres unless specified



Power Water-cooled

3,000V / 1,000A / 1 pin



Features

- Single-pin configuration
- High power
- Air-side water return
- In-vacuum accessories available – see section 6.7
- Standard vacuum mounting style
- Custom feedthrough configurations available upon request

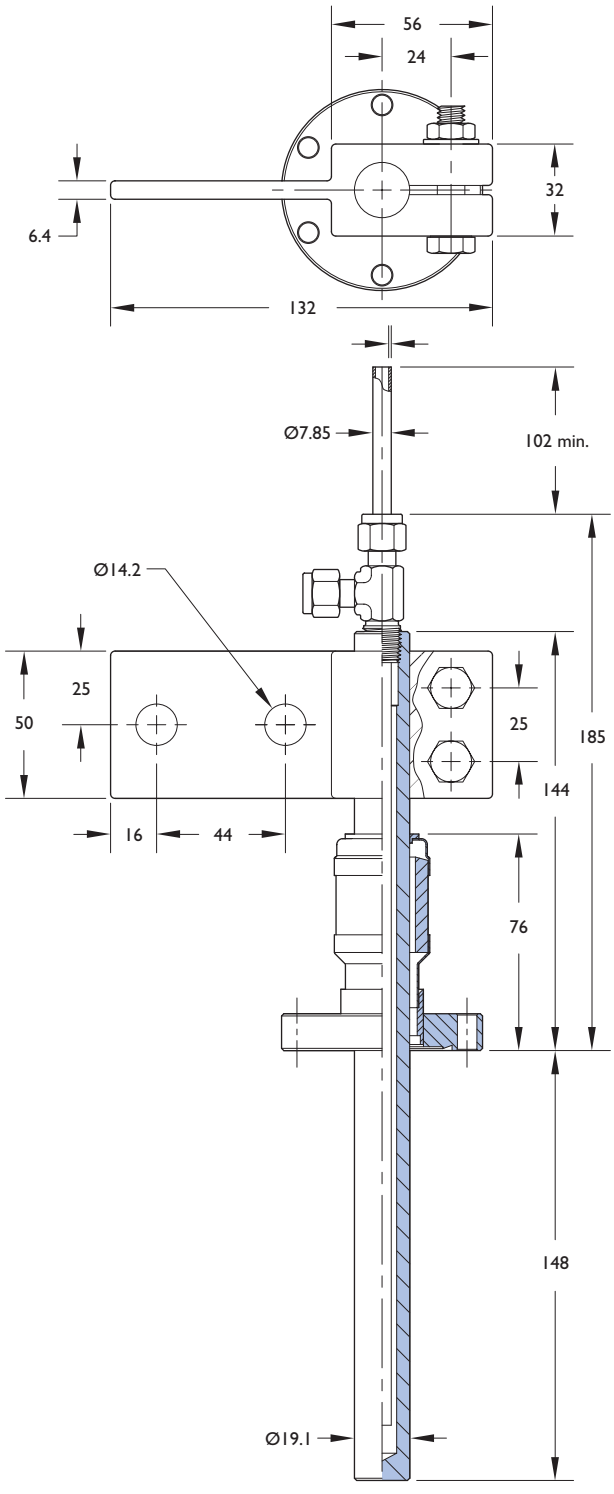
Specifications

Voltage[1]	3,000V DC
Current	1,000A
Material	
Flange	304ss
Conductor	Copper
Insulation	Alumina ceramic
Vacuum range UHV	1×10^{-10} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

UHV Series

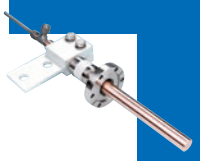


3,000V CF mount

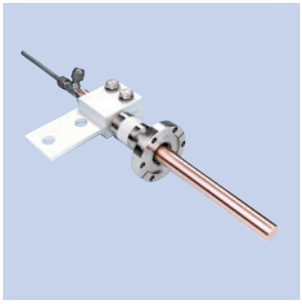
All dimensions are nominal in millimetres unless specified

Power Water-cooled

3,000V / 1,000A / 1 pin



CF



Volts	Amps	Conductor material	Flange mount	Reference	Part number
3000	1000	Copper	DN40CF	VHC1000-C40	**9462017**

All dimensions are nominal in millimetres unless specified

Powerglove

5,000V / 25A / 1 to 4 pins

Features

- 1 to 4 pin configuration
- High-voltage connector included
- In-vacuum accessories available
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

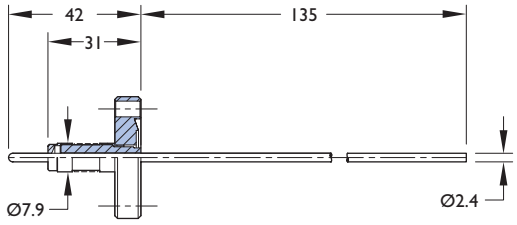
Specifications

Voltage[1]	5,000V DC
Current	25A
Material	
Flanges	304ss
Adaptor	304ss
Conductor	Copper
Insulation	Alumina ceramic
Vacuum range UHV / HV	1×10^{-10} mbar / 1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Air-side connector	-55°C to 125°C
Dimensions	Reference only, subject to change

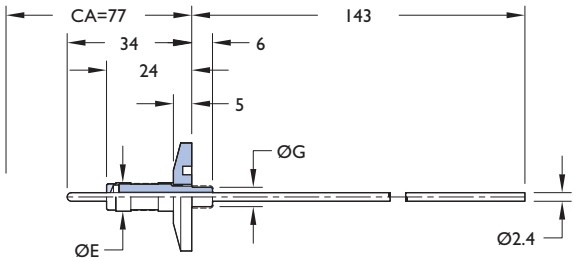
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

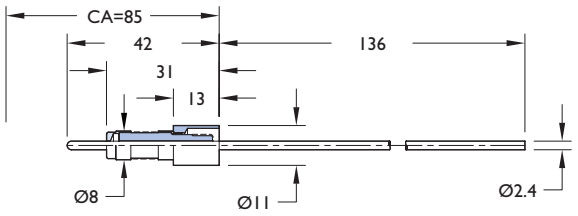
UHV Series



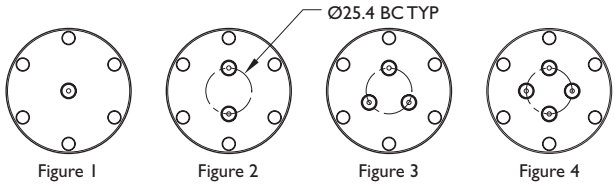
CF mount

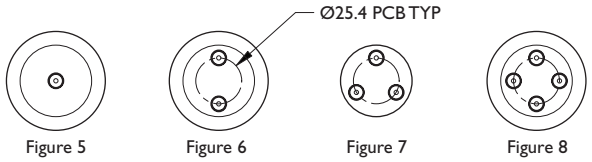


ISO KF mount

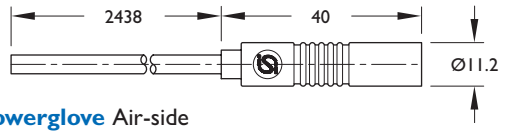


Weldable





End view Air-side



5kV Powerglove Air-side

All dimensions are nominal in millimetres unless specified

Powerglove

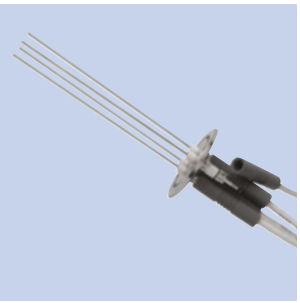
5,000V / 25A / 1 to 4 pins

CF

No. of Pins	Volts	Amps	Conductor material	Flange mount	End view figure	Reference	Part number
1	5kV	25	Copper	DN16CF	1	PBHV5-25C-C16	**9422040**
1	5kV	25	Copper	DN40CF	1	PBHV5-25C-C40	**9422043**
2	5kV	25	Copper	DN40CF	2	PBHV5-25C-2-C40	**9422046**
3	5kV	25	Copper	DN40CF	3	PBHV5-25C-3-C40	**9422049**
4	5kV	25	Copper	DN40CF	4	PBHV5-25C-4-C40	**9422052**

Air-side connectors included at no extra cost

ISO KF



No. of Pins	Volts	Amps	Flange mount	E	G	End view figure	Reference	Part number
1	5kV	25	DN16KF	8	6	5	PBHV5-25C-K16	**9423040**
1	5kV	25	DN40KF	8	6	5	PBHV5-25C-K40	**9423043**
2	5kV	25	DN40KF	33	31	6	PBHV5-25C-2-K40	**9423046**
3	5kV	25	DN40KF	33	31	7	PBHV5-25C-3-K40	**9423049**
4	5kV	25	DN40KF	33	31	8	PBHV5-25C-4-K40	**9423052**

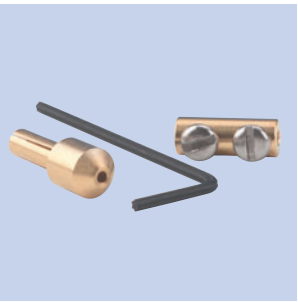
Air-side connectors included at no extra cost

Weldable

Volts	Amps	Conductor material	Reference	Part number
20kV	25	Copper	PBHV5-25C	**9421023**

Air-side connectors included at no extra cost

Accessories

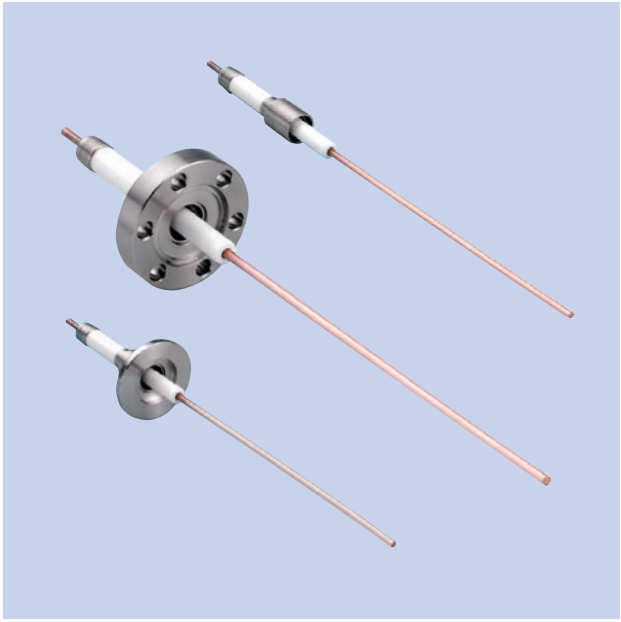


Accessory type	Material	Quantity per pack	Reference	Part number
Power push-on	BeCu	10	PPO-094	**9924003**
Power in-line	BeCu	10	PIL-120	**9924006**
Ceramic bead	Alumina	300mm	CB102	**9951003**

All dimensions are nominal in millimetres unless specified

Powerglove

10,000V / 25A / 1 to 4 pins



Features

- 1 to 4 pin configuration
- High-voltage connector included
- In-vacuum accessories available – see section 6.7
- 3 standard vacuum mounting styles available
- Custom feedthrough configurations available upon request

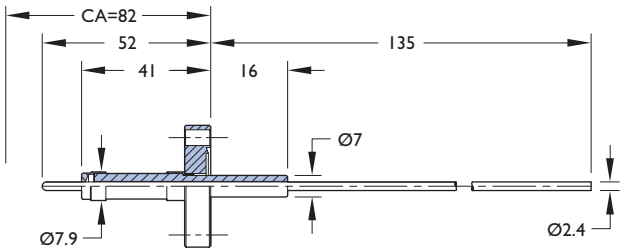
Specifications

Voltage[1]	10,000V DC
Current	25A
Material	
Flanges	304ss
Adaptor	304ss
Conductor	Copper
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Air-side connector	-55°C to 125°C
Dimensions	Reference only, subject to change

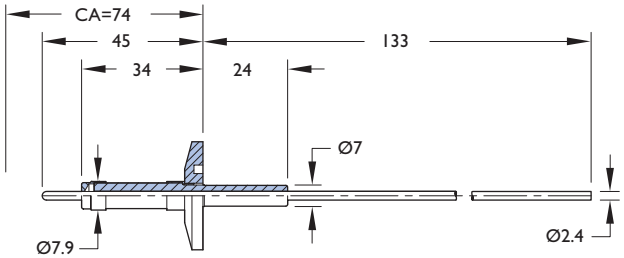
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

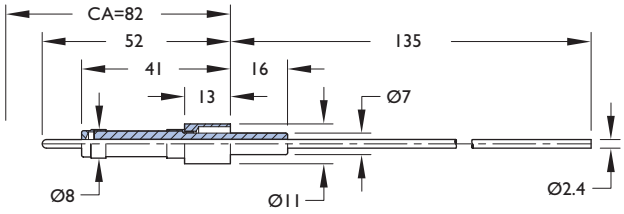
UHV and HV series



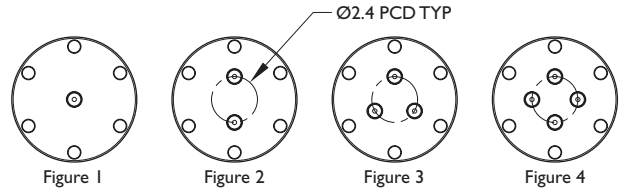
CF Mount

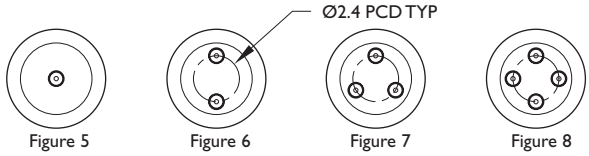


ISO KF Mount

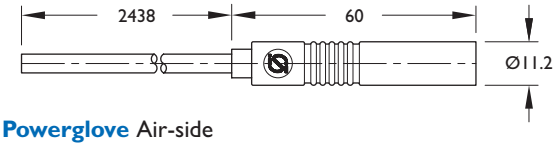


Weldable





End view Air-side



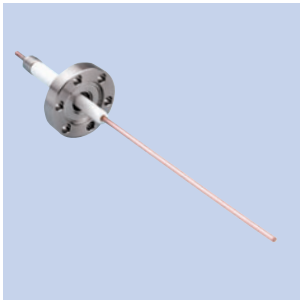
10kV Powerglove Air-side

All dimensions are nominal in millimetres unless specified

Powerglove

10,000V / 25A / 1 to 4 pins

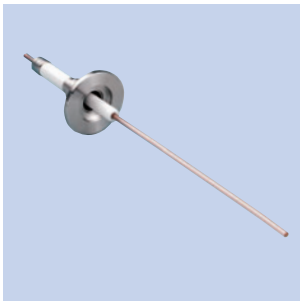
CF



No. of pins	Volts	Amps	Flange mount	End view figure	Conductor material	Reference	Part number
1	10kV	25	DN16CF	1	Copper	HV10-25C-1-C16	**9432016**
1	10kV	25	DN40CF	1	Copper	HV10-25C-1-C40	**9432019**
2	10kV	25	DN40CF	2	Copper	HV10-25C-2-C40	**9432022**
3	10kV	25	DN40CF	3	Copper	HV10-25C-3-C40	**9432025**
4	10kV	25	DN40CF	4	Copper	HV10-25C-4-C40	**9432028**

Air-side connectors included at no extra cost

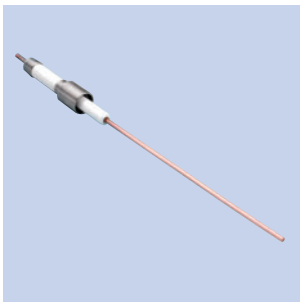
ISO KF



No. of pins	Volts	Amps	Flange mount	End view figure	Conductor material	Reference	Part number
1	10kV	25	DN16KF	5	Copper	HV10-25C-1-K16	**9433016**
1	10kV	25	DN40KF	5	Copper	HV10-25C-1-K40	**9433019**
2	10kV	25	DN40KF	6	Copper	HV10-25C-2-K40	**9433022**
3	10kV	25	DN40KF	7	Copper	HV10-25C-3-K40	**9433025**
4	10kV	25	DN40KF	8	Copper	HV10-25C-4-K40	**9433028**

Air-side connectors included at no extra cost

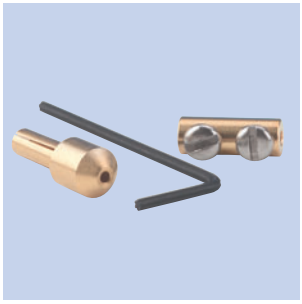
Weldable



Volts	Amps	Conductor material	Reference	Part number
20kV	25	Copper	PBHV20-25C	**9431016**

Air-side connectors included at no extra cost

Accessories

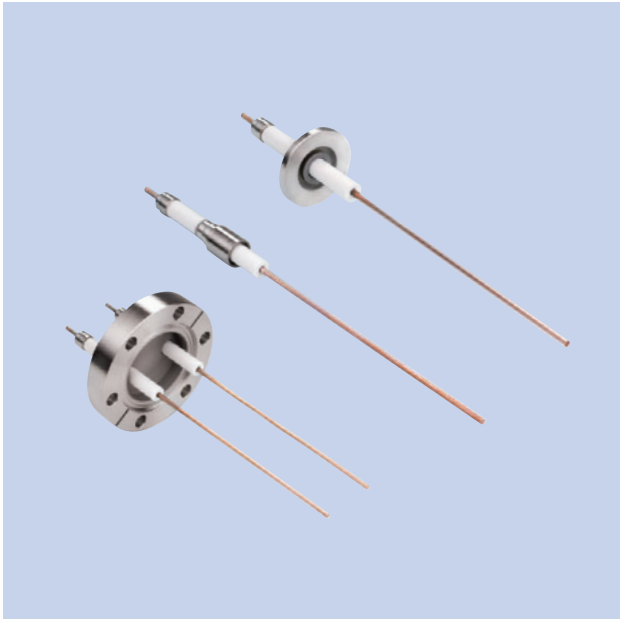


Accessory type	Material	Quantity per pack	Reference	Part number
Power push-on	BeCu	10	PPO-094	**9924003**
Power in-line	BeCu	10	PIL-120	**9924006**
Ceramic bead	Alumina	30mm	CB102	**9951003**

All dimensions are nominal in millimetres unless specified

Powerglove

20,000V / 25A / 1 to 4 pins



Features

- 1 to 4 pin configuration
- High-voltage connector included
- In-vacuum accessories available
- 3 standard vacuum mounting styles available
- Custom feedthrough configurations available upon request

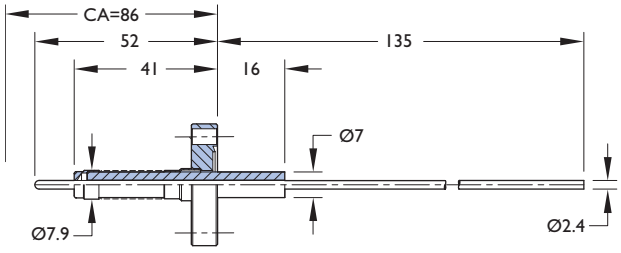
Specifications

Voltage[1]	20,000V DC
Current	25A
Material	
Flanges	304ss
Adaptor	304ss
Conductor	Copper
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Air-side connector	-55°C to 125°C
Dimensions	Reference only, subject to change

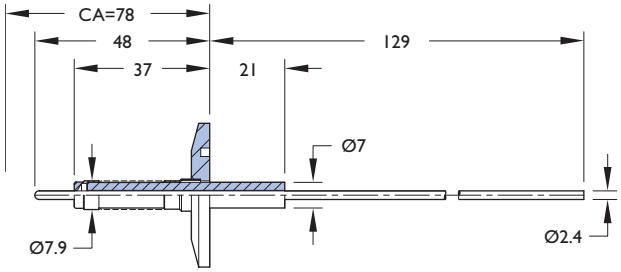
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

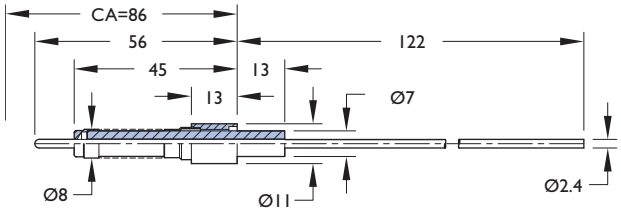
UHV and HV series



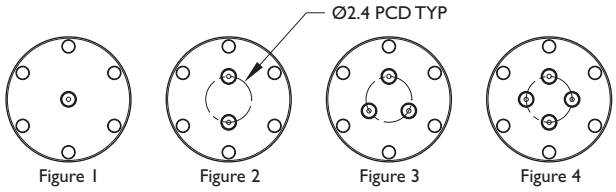
CF Mount

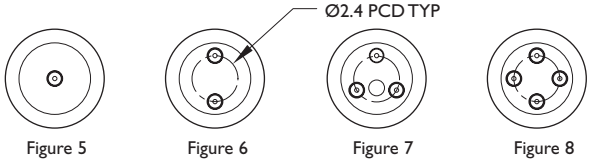


ISO KF Mount

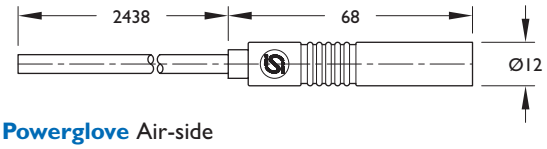


Weldable





End view Air-side

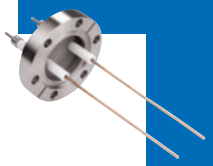


20kV Powerglove Air-side

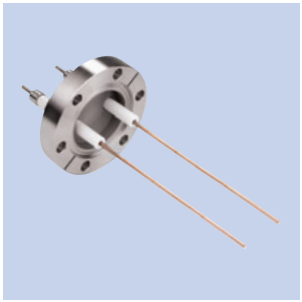
All dimensions are nominal in millimetres unless specified

Powerglove

20,000V / 25A / 1 to 4 pins



CF



No. of pins	Volts	Amps	Flange mount	End view figure	Conductor material	Reference	Part number
1	20kV	25	DN16CF	1	Copper	PBHV20-25C-C16	**9432043**
1	20kV	25	DN40CF	1	Copper	PBHV20-25C-C40	**9432046**
2	20kV	25	DN40CF	2	Copper	PBHV20-25C-2-C40	**9432049**
3	20kV	25	DN40CF	3	Copper	PBHV20-25C-3-C40	**9432052**
4	20kV	25	DN40CF	4	Copper	PBHV20-25C-4-C40	**9432055**

Air-side connectors included at no extra cost

ISO KF

No. of pins	Volts	Amps	Flange mount	End view figure	Conductor material	Reference	Part number
1	20kV	25	DN16KF	5	Copper	PBHV20-25C-K16	**9433043**
1	20kV	25	DN40KF	5	Copper	PBHV20-25C-K40	**9433046**
2	20kV	25	DN40KF	6	Copper	PBHV20-25C-2-K40	**9433049**
3	20kV	25	DN40KF	7	Copper	PBHV20-25C-3-K40	**9433052**
4	20kV	25	DN40KF	8	Copper	PBHV20-25C-4-K40	**9433055**

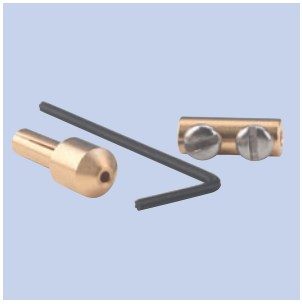
Air-side connectors included at no extra cost.

Weldable

Volts	Amps	Conductor material	Reference	Part number
20kV	25	Copper	PBHV20-25C	**9431016**

Air-side connectors included at no extra cost

Accessories

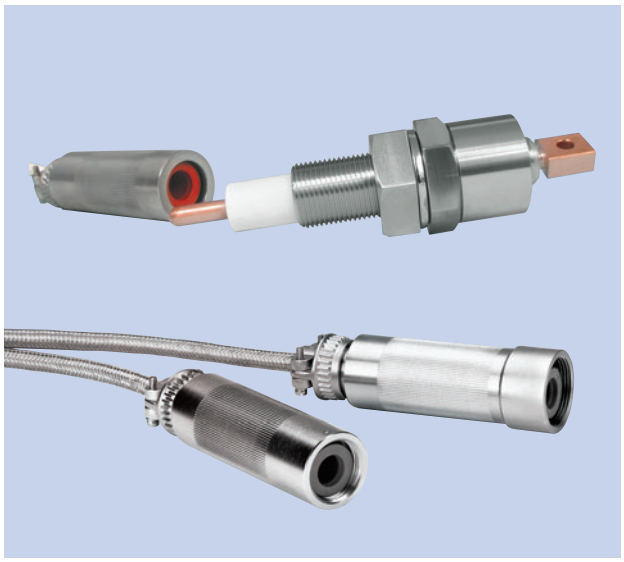


Accessory type	Material	Quantity per pack	Reference	Part number
Power push-on	BeCu	10	PPO-094	**9924003**
Power in-line	BeCu	10	PIL-120	**9924006**
Ceramic bead	Alumina	300mm	CB102	**9951003**

All dimensions are nominal in millimetres unless specified

Powerglove

15,000V / 70A



Features

- Single pin configuration
- High voltage
- High power
- Standard 25mm, 32mm and 34mm baseplate mounts available
- Custom feedthrough configurations available upon request

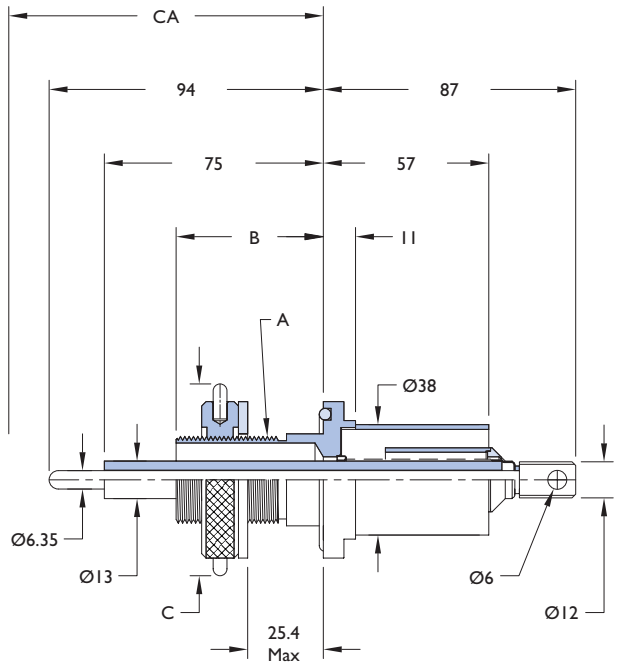
Specifications

Voltage[1]	15,000V DC
Current	70A
Material	
Baseplate	304ss
Adaptor	304ss
Conductor	Copper
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
Baseplate	-100°C to 450°C
Air-side connector	-55°C to 125°C
Dimensions	Reference only, subject to change

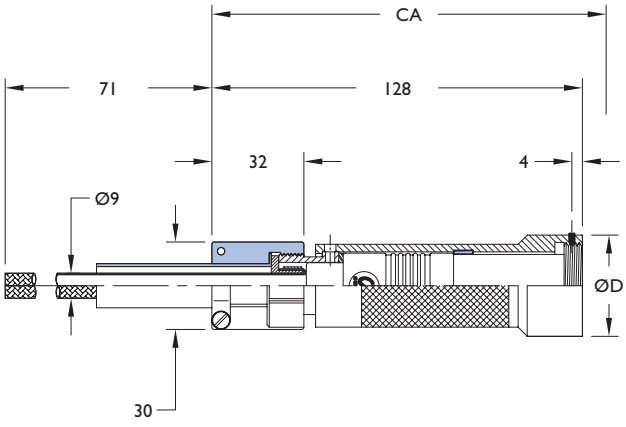
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

UHV and HV series



Baseplate mount 70A



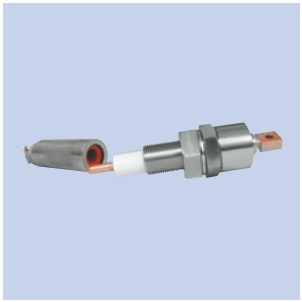
PowerBoot® lockout connector

All dimensions are nominal in millimetres unless specified

Powerglove

15,000V / 70A

Baseplate



Volts	Amps	Mount size	Thread A	B	C	CA	Reference	Part number
15kV	70	25.4	1-14 UNS	48	57	165	PBHV15-70C-25B	**9454012**
15kV	70	32	130 x 1.5mm	51	66	168	PBHV15-70C-32B	**9454013**
15kV	70	32	130 x 1.5mm	51	66	168	PBHV15-70C-34B	**9454014**

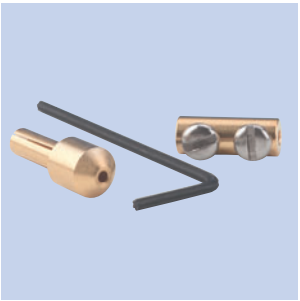
Air-side connectors included at no extra cost

PowerBoot® Lockout

Volts	Mount size	D	CA	Reference	Part number
15kV	25.4mm	32	165	PB15-25	**9924072**
15kV	32 & 34mm	35	168	PB15-32/34	**9924073**

Air-side connectors included at no extra cost

Accessories

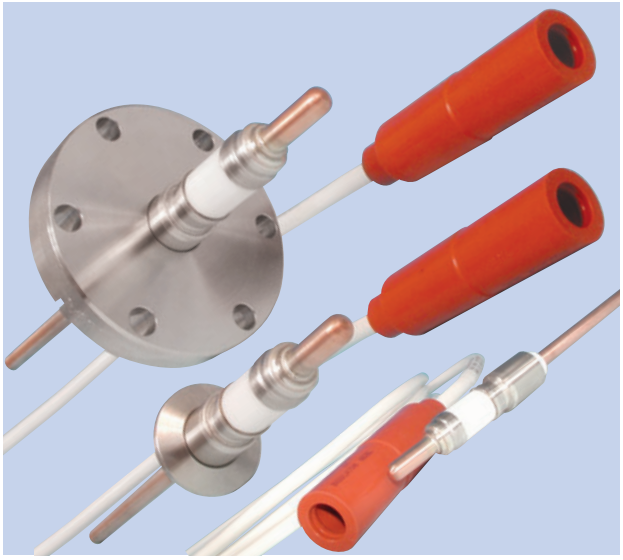


Accessory type	Material	Quantity per pack	Reference	Part number
Power in-line	BeCu	10	PIL-260	**9924008**

All dimensions are nominal in millimetres unless specified

Powerglove

15,000V / 70A / 1 and 2 pins



Features

- 1 and 2-pin configuration
- High power connector included
- 3 standard mounting styles
- Custom feedthrough configurations available upon request

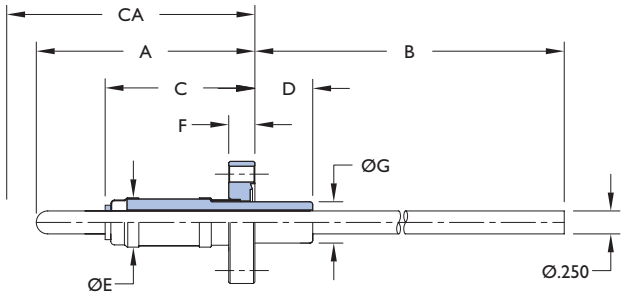
Specifications

Voltage[1]	15,000V DC
Current	70A
Material	
Baseplate	304ss
Adaptor	304ss
Conductor	Copper
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Air-side connector	-55°C to 125°C
Dimensions	Reference only, subject to change

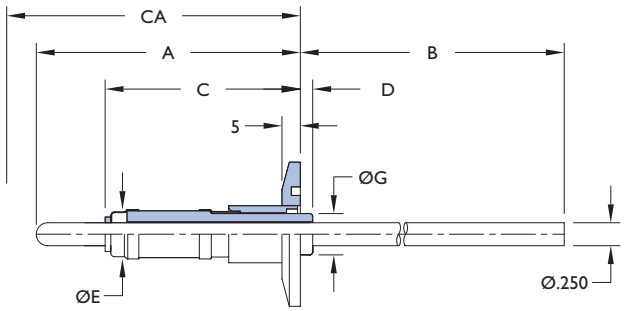
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

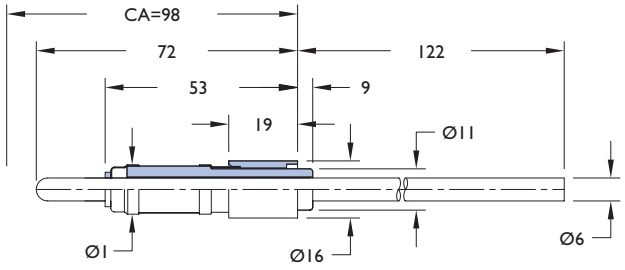
UHV and HV series



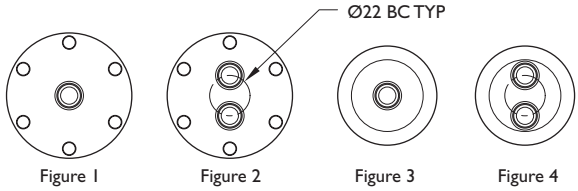
CF Mount



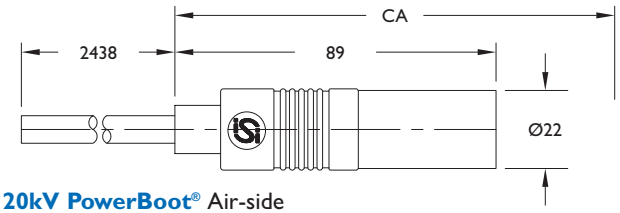
ISO KF Mount



Weldable



End view Air-side



20kV PowerBoot® Air-side

All dimensions are nominal in millimetres unless specified

Powerglove

15,000V / 70A / 1 and 2 pins

CF

No. of pins	Volts	Amps	Flange mount	End view fig.	A	B	C	D	E	F	G	CA	Reference	Part number
1	15kV	70	DN16CF	1	60	124	41	16	14	7	11	101	PBHV15-70C-C16	**9452100**
1	15kV	70	DN40CF	1	74	110	55	2	14	13	11	115	PBHV15-70C-2-C40	**9452101**
2	15kV	70	DN40CF	2	74	110	55	2	36	13	34	115	PBHV15-70C-C40	**9452102**

Air-side connectors included at no extra cost

KF

No. of pins	Volts	Amps	Flange mount	End view fig.	A	B	C	D	E	G	CA	Reference	Part number
1	15kV	70	DN16KF	1	59	125	40	17	14	11	100	PBHV15-70C-K16	**9453100**
1	15kV	70	DN25KF	1	73	111	54	4	36	34	114	PBHV15-70C-2-K25	**9453101**
1	15kV	70	DN40KF	1	73	111	54	4	36	34	114	PBHV15-70C-K40	**9453102**
1	15kV	70	DN50KF	1	73	111	54	4	36	34	114	PBHV15-70C-2-K50	**9453103**

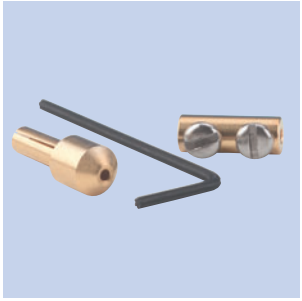
Air-side connectors included at no extra cost

Weldable

Volts	Amps	Conductor material	Reference	Part number
15kV	70	Copper	PBHV15-70C	**9451100**

Air-side connectors included at no extra cost

Accessories



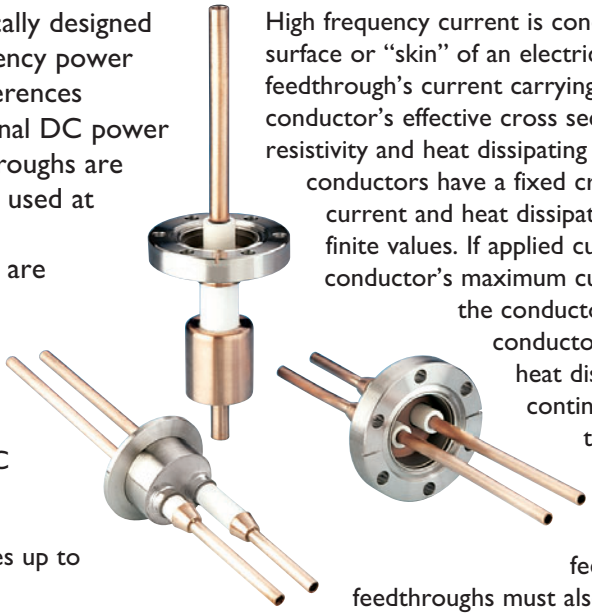
Accessory type	Material	Quantity per pack	Reference	Part number
Power in-line	BeCu	10	PIL-260	**9924008**

All dimensions are nominal in millimetres unless specified

RF Power

Introduction

RF power feedthroughs are specifically designed for the transmission of radio frequency power into the vacuum environment. Differences between Caburn-MDC's conventional DC power feedthroughs and RF power feedthroughs are found in the construction materials used at ceramic to metal interfaces. Highly conductive, non-magnetic materials are utilized in the construction of RF Power feedthroughs as they are less susceptible to the effects of current induction.



A common application of Caburn-MDC RF power feedthroughs is in-vacuum induction heating. Designs with power ratings as high as 35kW and frequencies up to 13.56MHz are available.

RF Power feedthroughs are constructed using copper alloys; high-conductivity non-magnetic materials, which are not susceptible to the effects of RF coupling. Both RF and DC power feedthroughs can be water-cooled to allow increased current-carrying capacity, while maintaining relatively small conductor sizes.

On the other hand, DC power feedthroughs are constructed using nickel-iron alloys, materials ideal for joining to alumina ceramics because of their low thermal coefficient of expansion. However, nickel-iron alloys are magnetic, and therefore highly susceptible to RF coupling.

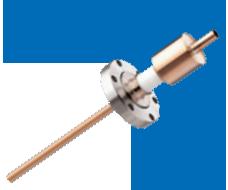
High frequency current is conducted along the outer surface or "skin" of an electrical conductor. A feedthrough's current carrying capacity is based on the conductor's effective cross sectional area, electrical resistivity and heat dissipating capacity. Since solid conductors have a fixed cross-sectional area, their current and heat dissipating capacity are therefore finite values. If applied currents exceed a solid conductor's maximum current rating, temperature in the conductor will rise. Tubular conductors can provide enhanced heat dissipation by means of continuous water cooling, therefore increasing the current-carrying capacity. As with other water-cooled electrical feedthroughs, RF power feedthroughs must also be installed with properly grounded cooling systems. For example, a coolant flow rate of 18 litres/hour was determined to be the minimum allowable rate in a test of the 35kW feedthrough.

When installing two 35kW/13.56MHz RF power feedthroughs side by side, their centre-to-centre spacing must be greater than 51mm. RF Power feedthrough users must allow adequate clearance between the feedthrough and any surrounding hardware in order to avoid RF coupling.

UHV and HV series

Caburn-MDC offers three standard vacuum mount styles: CF, ISO KF and weldable. Additional configurations are available upon request.

All dimensions are nominal in millimetres unless specified



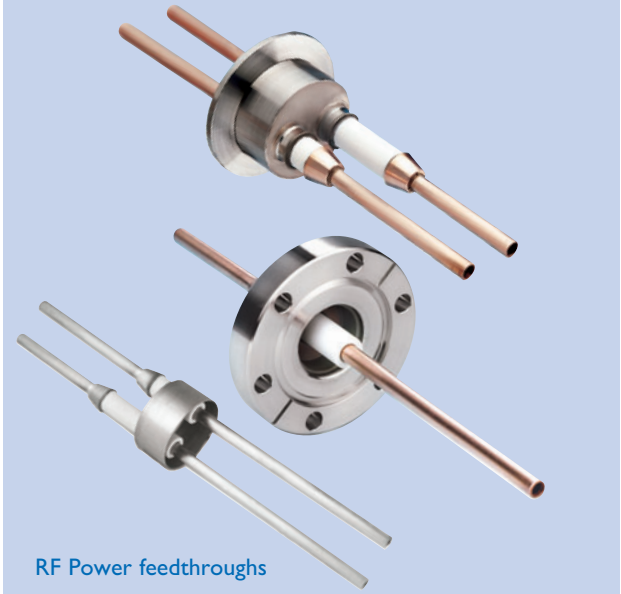
General specifications

Type	Specification voltage/current	Maximum bakeout temperature	Conductor tube materials	Number of tubes
RF Power 8,000V 	8000V DC 10kW at 450kHz	CF Flange 300°C ISO KF Flange 150°C Weldable 450°C	Copper	1 and 2 tubes
RF Power 10,000V 	10,000V DC 20 and 35kW at 13.56MHz	CF Flange 300°C ISO KF Flange 150°C Weldable 450°C	Copper	1 and 2 tubes

All dimensions are nominal in millimetres unless specified

RF Power

8,000V / 10kW / 450kHz



RF Power feedthroughs

Features

- 1 and 2 tube configuration
- High voltage
- High power
- 2 different conductor materials available
- In-vacuum accessories available – see section 6.7
- Standard vacuum mounting styles
- Custom feedthrough configurations available upon request

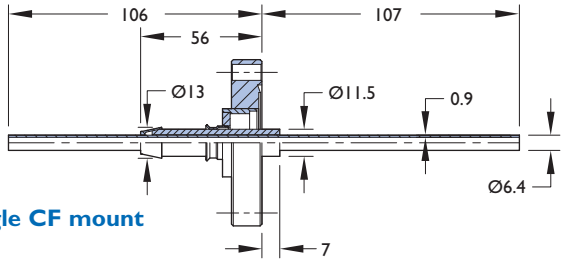
Specifications

Voltage[1]	8,000V DC
Current	10kW
Material	
Flanges	304ss
Adaptor	304ss
Conductor	Copper
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 300°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C
Dimensions	Reference only, subject to change

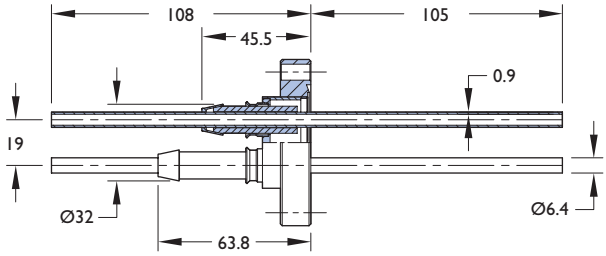
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

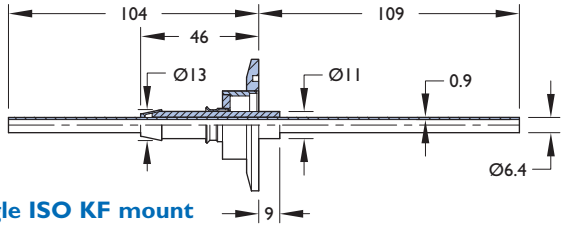
UHV and HV series



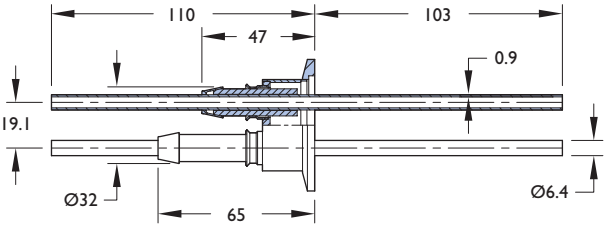
Single CF mount



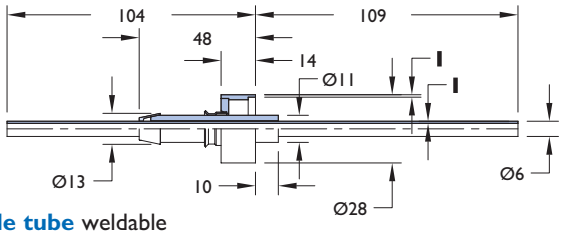
Double CF mount



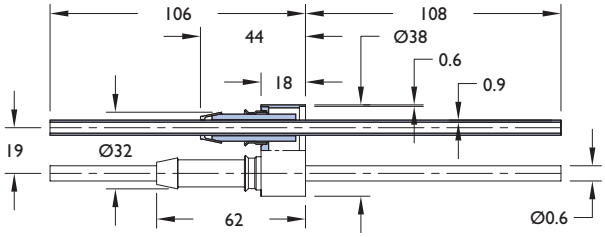
Single ISO KF mount



Double ISO KF mount



Single tube weldable



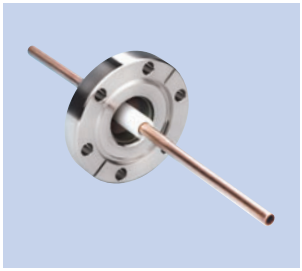
Double tube weldable

All dimensions are nominal in millimetres unless specified

RF Power

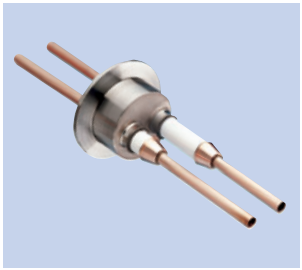
8,000V / 10kW / 450kHz

CF



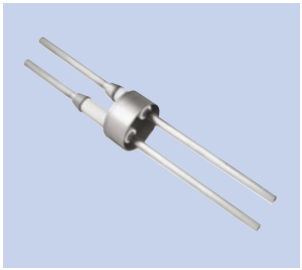
No. of tubes	Flange mount	Volts	kHz	Power	Reference	Part number
1	DN40CF	8kV	450	10kW	RF10-C40	**9512000**
2	DN40CF	8kV	450	10kW	RF10-2-C40	**9512001**

ISO KF



No. of tubes	Flange mount	Volts	kHz	Power	Reference	Part number
1	DN40KF	8kV	450	35kW	RF10-K40	**9513000**
2	DN40KF	8kV	450	20kW	RF10-2-K40	**9513001**

Weldable



No. of tubes	Volts	kHz	Power	Reference	Part number
1	8000	450	35kW	RF10	**9511000**
2	8000	450	20kW	RF10-2	**9511001**

Accessories

RAPC

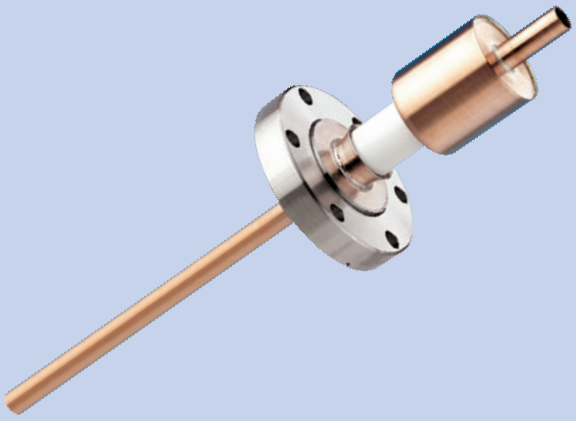
IPLC

Accessory type	Material	Quantity per pack	Reference	Part number
In-line clamp	Copper	1	IPLC	**991536**
Right-angle clamp	Copper	1	RAPC	**991537**

All dimensions are nominal in millimetres unless specified

RF Power

10,000V / 20 and 35kW / 13.56MHz



RF Power feedthroughs

Features

- 1 and 2 tube configuration
- High voltage
- High power
- 2 different conductor materials available
- In-vacuum accessories available
- Standard vacuum mounting styles
- Custom feedthrough configurations available upon request

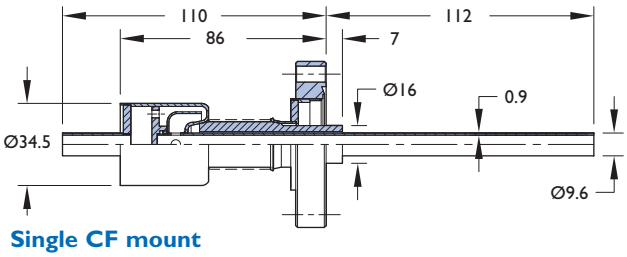
Specifications

Voltage[1]	10,000V DC
Current	20 and 35kW
Material	
Flanges	304ss
Adaptor	304ss
Conductor	Copper
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted feedthrough	-100°C to 300°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Dimensions	Reference only, subject to change

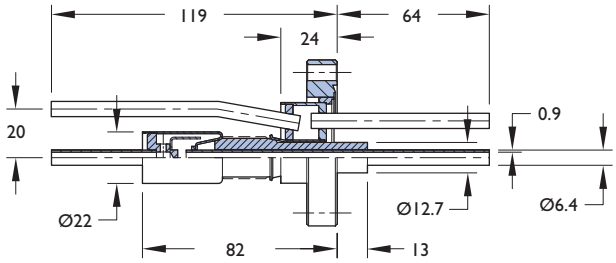
[1] See intended operating parameters in introductory section.

[2] Overall assembly ratings must be adjusted to that of the lowest rated component.

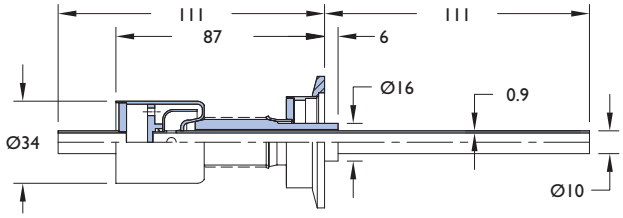
UHV and HV series



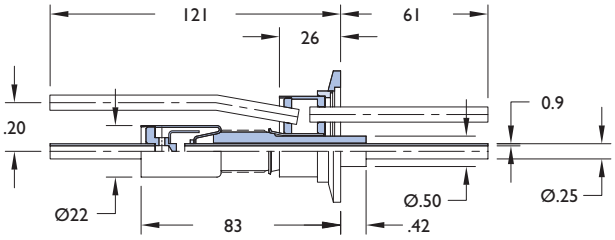
Single CF mount



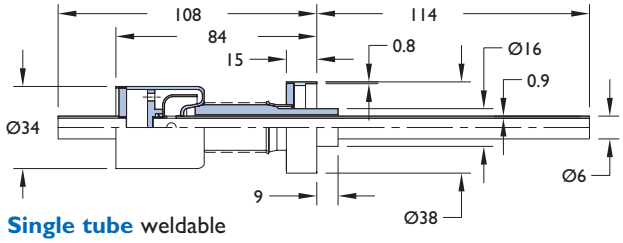
Double CF mount



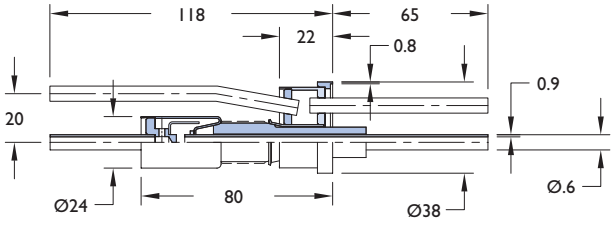
Single ISO KF mount



Double ISO KF mount



Single tube weldable

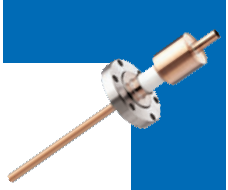


Double tube weldable

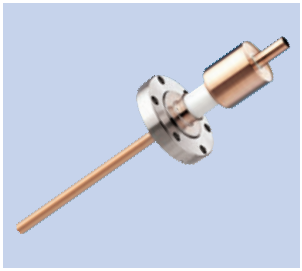
All dimensions are nominal in millimetres unless specified

RF Power

10,000V / 20 and 35kW / 13.56MHz



CF

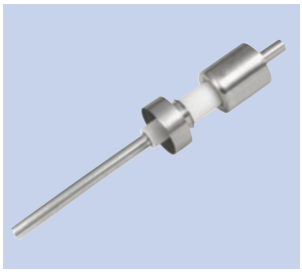


No. of tubes	Flange mount	Volts	kHz	Power	Reference	Part number
1	DN40KF	10kV	13.56	35kW	RF35-C40	**9512020**
2	DN40KF	10kV	13.56	20kW	RF20-2-C40	**9512010**

ISO KF

No. of tubes	Volts	MHz	Power	Flange mount	Reference	Part number
1	10	13.56	35kW	DN40CF	RF35-K40	**9513011**
2	10	13.56	20kW	DN40CF	RF20-2-K40	**9513010**

Weldable



No. of tubes	Volts	MHz	Power	Reference	Part number
1	10	13.56	35kW	RF35	**9511020**
2	10	13.56	20kW	RF20-2	**9511010**

Accessories

RAPC

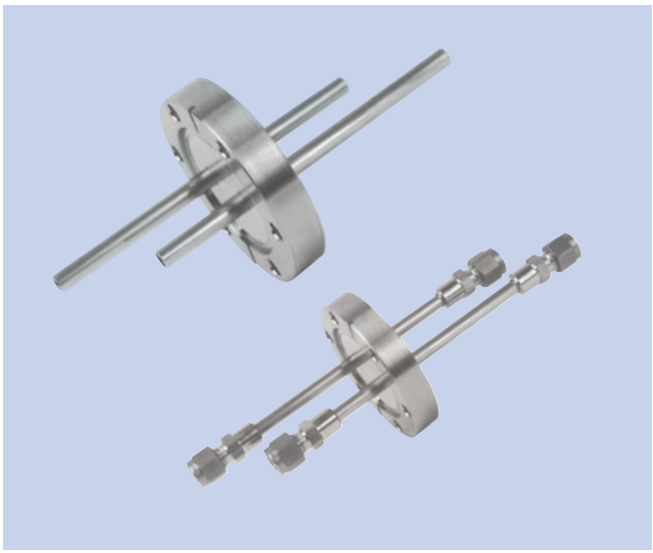
Accessory type	Material	Quantity per pack	Reference	Part number
In-line clamp	Copper	1	IPLC	**991536**
Right angle clamp	Copper	1	RAPC	**991537**

IPLC

All dimensions are nominal in millimetres unless specified

Liquid

Introduction



Liquid is the designation Caburn-MDC gives to a series of non-electrical feedthrough products designed for the transmission of fluids and gases into high and ultrahigh vacuum environments. Caburn-MDC offers two product categories: water and liquid nitrogen feedthroughs.

Water feedthroughs are used to transfer coolant to processing equipment inside a vacuum. For example, electron beam evaporation sources must be in a high-vacuum environment and generating a densely focused electron beam to produce enough heat to evaporate alumina ceramics; water cooling is therefore required to prevent damage to evaporation crucibles and electromagnetic coils used respectively to contain the molten alumina and focus the electron beam.

Liquid nitrogen feedthroughs are used for the same cooling purposes as water feedthroughs but offer lower temperature (-200°C) capabilities and therefore greater cooling rates. Liquid nitrogen feedthroughs are designed to minimize heat transfer between coolant lines and vacuum mounts. Ice build up can be detrimental to the sealing characteristics of a vacuum mount.

Thermal insulation in liquid nitrogen lines is achieved through double wall coaxial construction. A 6.4mm diameter cooling line is inserted and welded to one end of a 12.7mm diameter support tube. The opposite end of the 12.7mm support tube is welded to the vacuum mount which, when evacuated, creates a coaxial vacuum cavity between the two tubes. This cavity is an excellent thermal barrier, which prevents ice build up on the air side of the vacuum mount.

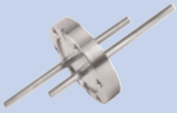
Vacuum mount fitted, water and liquid nitrogen feedthroughs are constructed with 6.4mm diameter, type 304 stainless steel tubing with a choice of three industry standard fittings, Weld-tube (plain tubes without fittings), 6.4mm diameter Swagelok® compression fittings or 64mm diameter male VCR® metal gasket seal fittings. Mating VCR® female nuts and metal copper gaskets must be purchased separately.

UHV and HV series

Caburn-MDC offers two standard vacuum mount styles.

Part numbers printed in light blue indicate products that are suitable for -200°C cryogenic applications

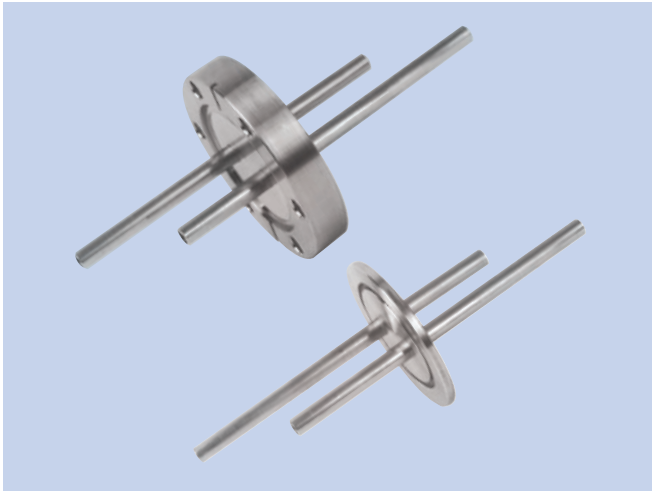
General specifications

Type	Tubes	Maximum bakeout temperature	Fittings
Water 	6.4mm (¼") diameter Type 304 stainless steel	CF Flange to 450°C ISO KF Flange to 150°C 25mm to 150°C Baseplate 150°C Weldable 450°C	Weldable 6.4mm (¼") Swagelok® 6.4mm (¼") Male VCR®®
Liquid nitrogen 	6.4mm (¼") diameter Type 304 stainless steel	CF Flange to 450°C ISO KF Flange to 150°C 25mm to 150°C Baseplate 150°C Weldable 450°C	Weldable 6.4mm (¼") Swagelok® 6.4mm (¼") Male VCR®®

Customer note All Swagelok® and VCR® fittings are supplied in imperial (inch) sizes

For metric fittings, contact your local technical sales team

All dimensions are nominal in millimetres unless specified



Features

- In-vacuum accessories available
- 2 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

Specifications

Material

Flanges	304 Stainless steel

Vacuum range

UHV / HV	1×10^{-10} mbar/1×10^{-8} mbar

Temperature range[1]

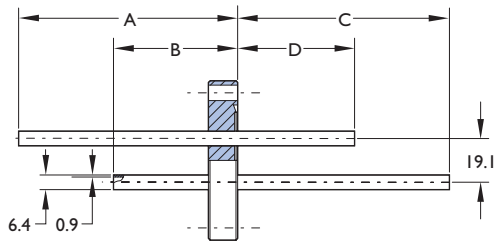
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C

Dimensions

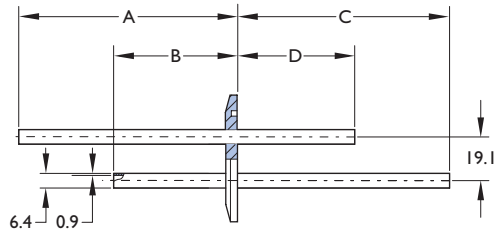
Reference only, subject to change

[1] Overall assembly ratings must be adjusted to that of the lowest rated component

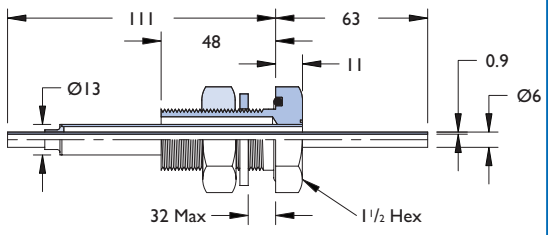
UHV and HV series



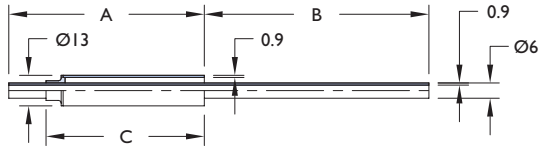
CF Mount Figure 1



ISO KF Mount Figure 2



Baseplate mount Figure 3



Weldable mount Figure 4

Number of tubes	Flange	Fitting	Fig.	A	B	C	D	Reference	Part number
1	DN16CF	Tubeweld	1	95	–	–	51	CLF16-1	**9812000**
1	DN40CF	Tubeweld	1	95	–	–	51	CLF40-1	**9812001**
2	DN40CF	Tubeweld	1	95	54	92	51	CLF40-2	**9812002**

Number of tubes	Flange	Fitting	Figure	A	B	C	D	Reference	Part number
1	DN16KF	Tubeweld	2	95	–	–	51	KLF16-1	**9813000**
1	DN25KF	Tubeweld	2	95	–	–	51	KLF25-1	**9813001**
1	DN40KF	Tubeweld	2	95	–	–	51	KLF40-1	**9813002**
1	DN50KF	Tubeweld	2	95	–	–	51	KLF50-1	**9813003**
2	DN40KF	Tubeweld	2	95	54	92	51	KLF40-2	**9813004**
2	DN50KF	Tubeweld	2	95	54	92	51	KLF50-2	**9813005**

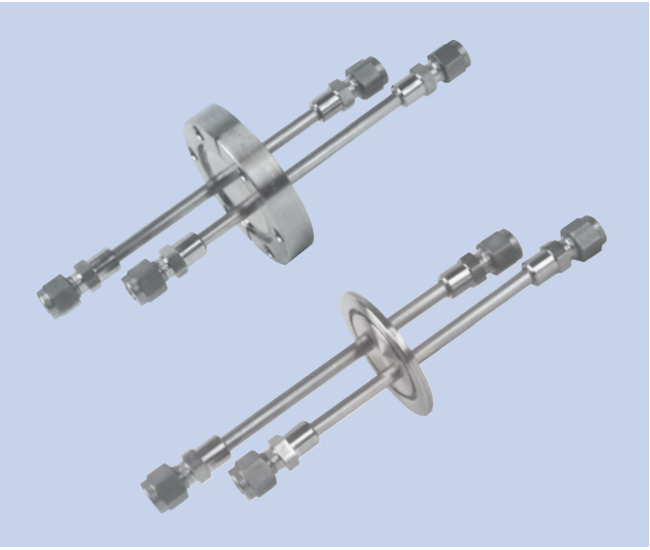
Number of tubes	Mount diameter	Figure	Reference	Part number
1	25.4	4	BLF25	**9814000**

Number of tubes	Mount diameter	Figure	Reference	Part number
1	13	4	WLF13	**9811000**

All dimensions are nominal in millimetres unless specified

Liquid

Water – Swagelock®



Features

- In-vacuum accessories available
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

Specifications

Material

Flanges	304 Stainless steel
Tubes / fittings	304 Stainless steel

Vacuum range

UHV / HV	1×10^{-10} mbar / 1×10^{-8} mbar

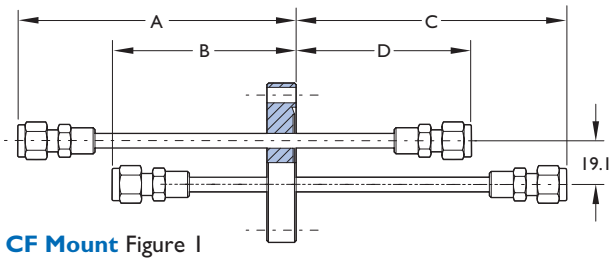
Temperature range[1]

CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C

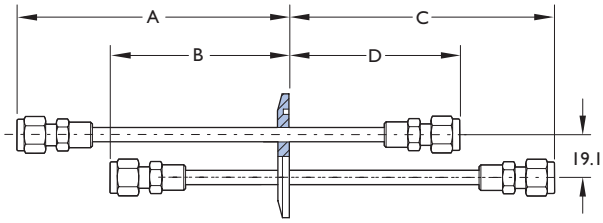
Dimensions Reference only, subject to change

[1] Overall assembly ratings must be adjusted to that of the lowest rated component

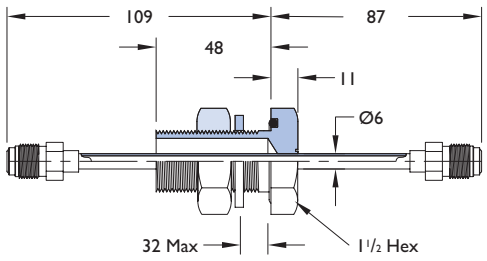
UHV and HV series



CF Mount Figure 1



ISO KF Mount Figure 2



Baseplate mount Figure 3

Customer note

All Swagelok® and VCR® fittings are supplied in imperial (inch) sizes

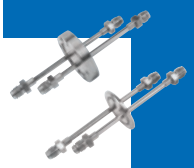
For metric fittings, contact your local technical sales team

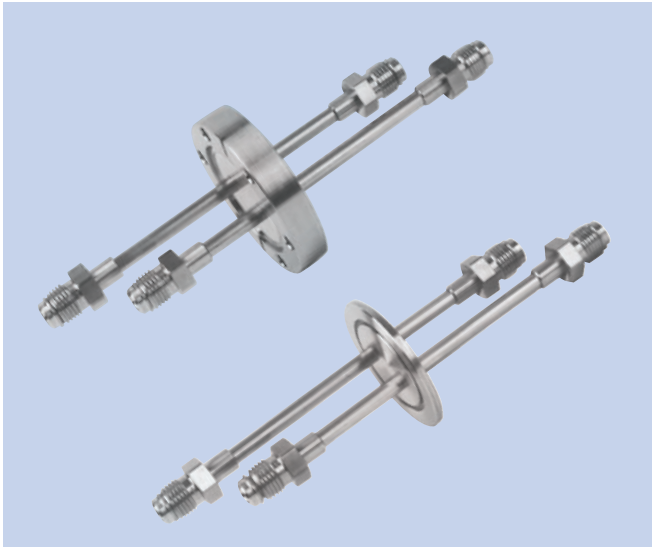
Number of tubes	Flange	Fitting	Figure	A	B	C	D	Reference	Part number
1	DN16CF	Swagelok®	1	121	–	–	76	CLF16-1S	**9812003**
1	DN40CF	Swagelok®	1	121	–	–	76	CLF40-1S	**9812004**
2	DN40CF	Swagelok®	1	121	79	118	76	CLF40-2S	**9812005**

Number of tubes	Flange	Fitting	Figure	A	B	C	D	Reference	Part number
1	DN16KF	Swagelok®	2	121	–	–	76	KLF16-1S	**9813006**
1	DN25KF	Swagelok®	2	121	–	–	76	KLF25-1S	**9813007**
1	DN40KF	Swagelok®	2	121	–	–	76	KLF40-1S	**9813008**
1	DN50KF	Swagelok®	2	121	–	–	76	KLF50-1S	**9813009**
2	DN40KF	Swagelok®	2	121	79	118	76	KLF40-2S	**9813010**
2	DN50KF	Swagelok®	2	121	79	118	76	KLF50-2S	**9813011**

Number of tubes	Mount diameter	Figure	Reference	Part number
1	25.4	3	BLF25-1S	**9814001**

All dimensions are nominal in millimetres unless specified





Features

- In-vacuum accessories available
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

Specifications

Material

Flanges	304 Stainless steel
Tubes	304 Stainless steel

Vacuum range

UHV	1×10^{-10} mbar

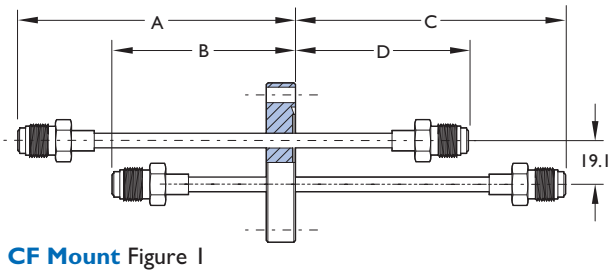
Temperature range[1]

CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C

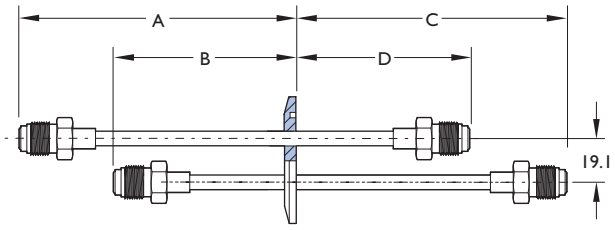
Dimensions Reference only, subject to change

[1] Overall assembly ratings must be adjusted to that of the lowest rated component

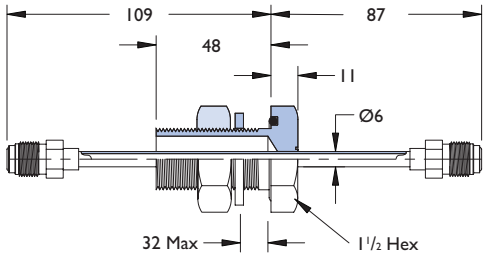
UHV and HV series



CF Mount Figure 1



ISO KF Mount Figure 2



Baseplate mount Figure 3

Customer note

All Swagelok® and VCR® fittings are supplied in imperial (inch) sizes

For metric fittings, contact your local technical sales team

Number of tubes	Flange	Fitting	Figure	A	B	C	D	Reference	Part number
1	DN16CF	VCR®	1	121	–	–	76	CLF16-1V	**9812006**
1	DN40CF	VCR®	1	121	–	–	76	CLF40-1V	**9812007**
2	DN40CF	VCR®	1	121	79	118	76	CLF40-2V	**9812008**

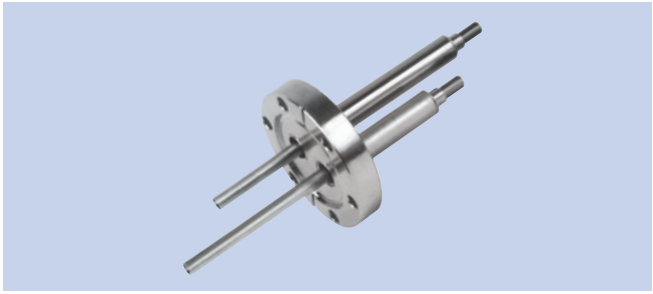
Number of tubes	Flange	Fitting	Figure	A	B	C	D	Reference	Part number
1	DN16KF	VCR®	2	121	–	–	76	KLF16-1V	**9813012**
1	DN25KF	VCR®	2	121	–	–	76	KLF25-1V	**9813013**
1	DN40KF	VCR®	2	121	–	–	76	KLF40-1V	**9813014**
1	DN50KF	VCR®	2	121	–	–	76	KLF50-1V	**9813015**
2	DN40KF	VCR®	2	121	79	118	76	KLF40-2V	**9813016**
2	DN50KF	VCR®	2	121	79	118	76	KLF50-2V	**9813017**

Number of tubes	Mount diameter	Figure	Reference	Part number
1	25.4	5	BLF25-1V	**9814002**

All dimensions are nominal in millimetres unless specified

Liquid

Nitrogen – Tube



Features

- In-vacuum accessories available
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

Specifications

Material

Flanges	304 Stainless steel
Tubes	304 Stainless steel

Vacuum range

UHV	1×10^{-10} mbar

Temperature range[1]

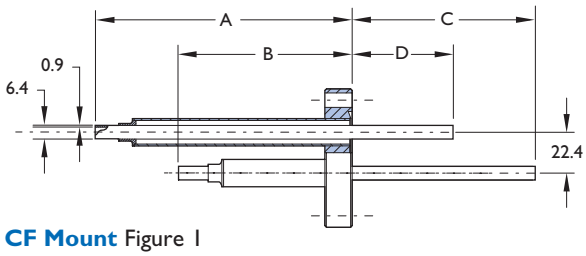
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C

Dimensions

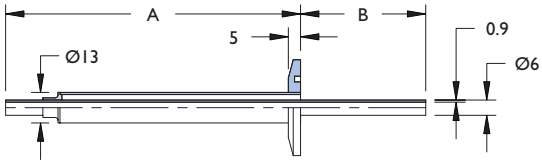
Reference only, subject to change

[1] Overall assembly ratings must be adjusted to that of the lowest rated component.

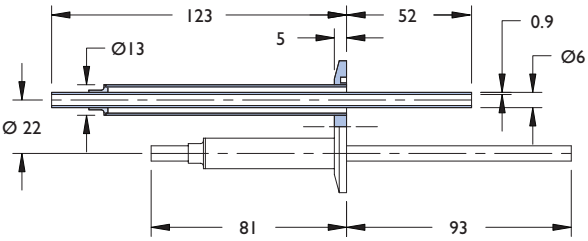
UHV Series



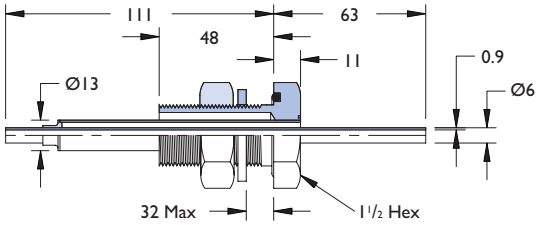
CF Mount Figure 1



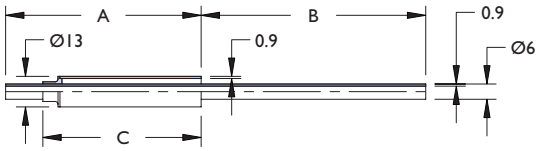
ISO KF Mount Figure 2



ISO KF Mount Figure 3



Baseplate mount Figure 4



Weldable mount Figure 5

No. of tubes	Flange	Fig.	A	B	Reference	Part number
1	DN16KF	3	151	75	KLN16-1	9813100
1	DN25KF	3	148	77	KLN25-1	9813101
1	DN40KF	3	148	77	KLN40-1	9813102
1	DN50KF	3	148	77	KLN50-1	9813103
2	DN40KF	4	–	–	KLN40-2	9813104
2	DN50KF	4	–	–	KLN50-2	9813105

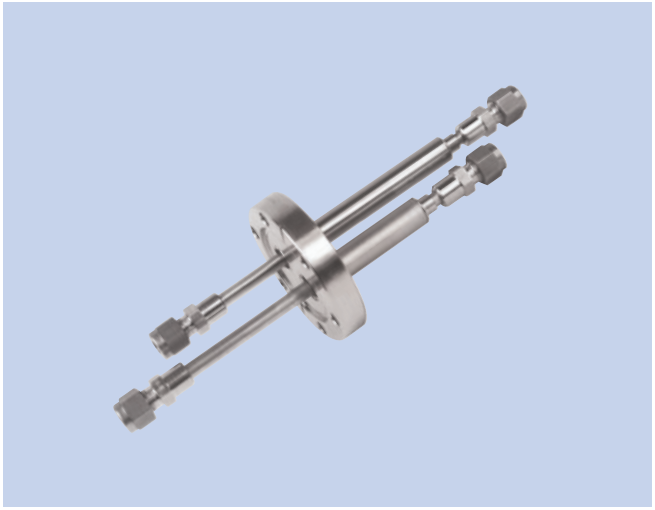
No. of tubes	Mount dia.	Fig.	Reference	Part number
1	25.4	5	BLN25-1	9814100

Mount dia.	Fig.	A	B	C	Reference	Part number
13	6	123	52	107	WLM13L	981101
13	6	81	93	66	WLM13	981102

Number of tubes	Flange	Fitting	A	B	C	D	Reference	Part number
1	DN16CF	Tube weld	124	–	–	51	CLN16-1	9812100
1	DN40CF	Tube weld	124	–	–	51	CLN40-1	9812101
2	DN40CF	Tube weld	124	83	92	51	CLN40-2	9812102

Part numbers printed in light blue indicate products that are suitable for -200°C cryogenic applications

All dimensions are nominal in millimetres unless specified



Features

- In-vacuum accessories available
- 2 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

Specifications

Material

Flanges	304 Stainless steel
Tubes	304 Stainless steel

Vacuum range

UHV	1×10^{-10} mbar

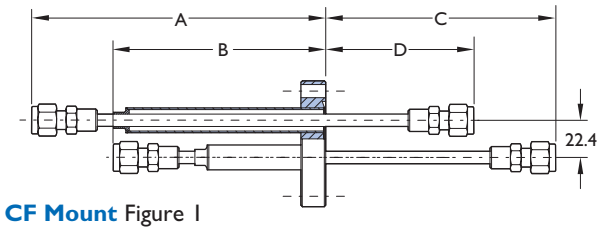
Temperature range[1]

CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C

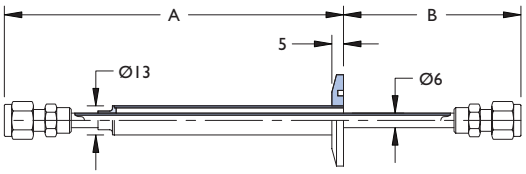
Dimensions Reference only, subject to change

[1] Overall assembly ratings must be adjusted to that of the lowest rated component

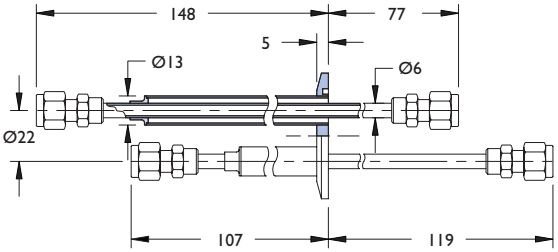
UHV Series



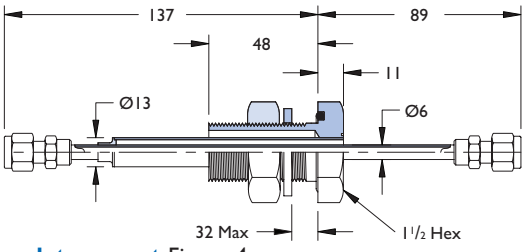
CF Mount Figure 1



ISO KF Mount Figure 2



ISO KF Mount Figure 3



Baseplate mount Figure 4

Customer note

All Swagelok® and VCR® fittings are supplied in imperial (inch) sizes

For metric fittings, contact your local technical sales team

Number of tubes	Flange	Figure	Fitting	A	B	C	D	Reference	Part number
1	DN16CF	-	Swagelok®	124	–	–	76	CLN16-1S	9812103
1	DN40CF	-	Swagelok®	124	–	–	76	CLN40-1S	9812104
2	DN40CF	1	Swagelok®	124	108	118	76	CLN40-2S	9812105

Number of tubes	Flange	Figure	A	B	Reference	Part number
1	DN16KF	2	151	75	KLN16-1S	9813106
1	DN25KF	2	148	77	KLN25-1S	9813107
1	DN50KF	2	148	77	KLN40-1S	9813108
2	DN40KF	3	–	–	KLN40-2S	9813109
2	DN50KF	3	–	–	KLN50-2S	9813110

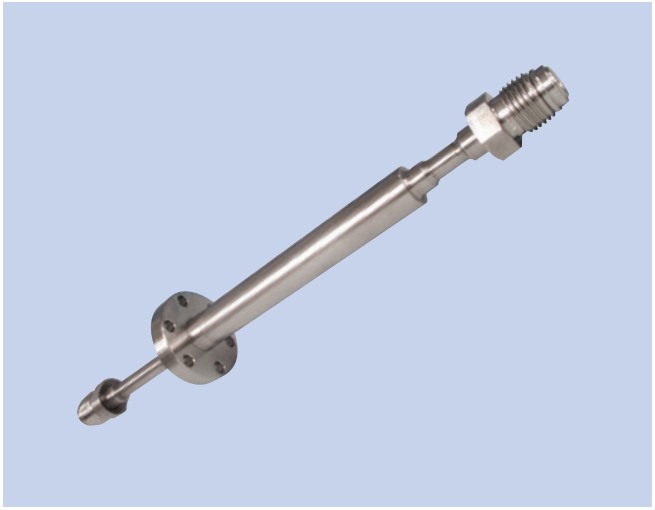
Number of tubes	Mount diameter	Figure	Reference	Part number
1	25.4	4	BLN25-1	9814002

Part numbers printed in light blue indicate products that are suitable for -200°C cryogenic applications

All dimensions are nominal in millimetres unless specified

Liquid

Nitrogen – VCR®



Features

- In-vacuum accessories available
- 2 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

Specifications

Material

Flanges	304 Stainless steel
Tubes	304 Stainless steel

Vacuum range

UHV	1×10^{-10} mbar

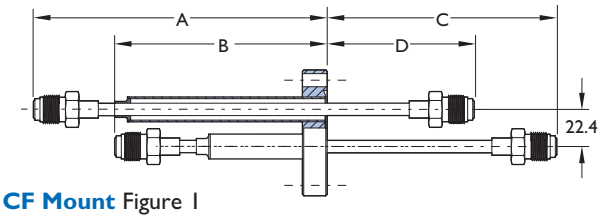
Temperature range[1]

CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable feedthrough	-100°C to 450°C

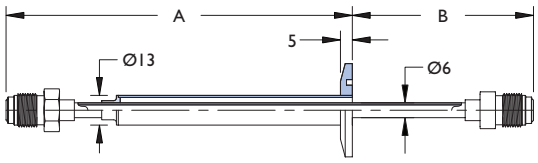
Dimensions Reference only, subject to change

[1] Overall assembly ratings must be adjusted to that of the lowest rated component

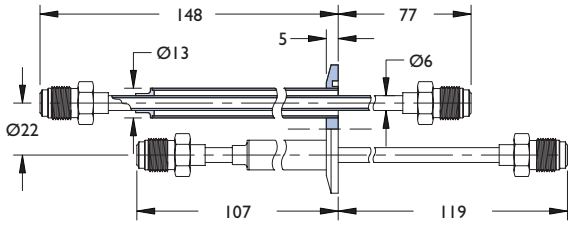
UHV Series



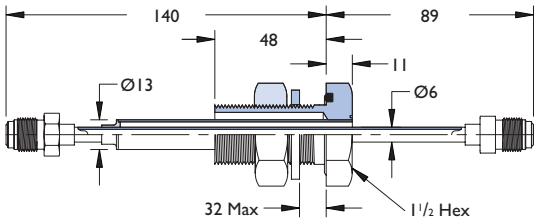
CF Mount Figure 1



ISO KF Mount Figure 2



ISO KF Mount Figure 3



Baseplate mount Figure 4

Customer note

All Swagelock® and VCR® fittings are supplied in imperial (inch) sizes

For metric fittings, contact your local technical sales team

Number of tubes	Flange	Fitting	Figure	A	B	C	D	Reference	Part number
1	DN16CF	VCR®	1	124	–	–	76	CLN16-1V	9812106
1	DN40CF	VCR®	1	124	–	–	76	CLN40-1V	9812107
2	DN40CF	VCR®	1	148	108	118	76	CLN40-2V	9812108

Number of tubes	Flange	Figure	A	B	Reference	Part number
1	DN16KF	3	151	75	KLN16-1V	9813112
1	DN25KF	3	148	77	KLN25-1V	9813113
1	DN50KF	3	148	77	KLN40-1V	9813114
2	DN40KF	4	–	–	KLN40-2V	9813115
2	DN50KF	4	–	–	KLN50-2V	9813116

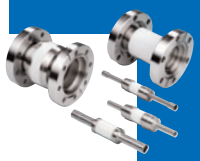
Number of tubes	Mount diameter	Figure	Reference	Part number
1	25.4	5	BLN25-1V	9814102

Part numbers printed in light blue indicate products that are suitable for -200°C cryogenic applications

All dimensions are nominal in millimetres unless specified

Section 6.7

Breaks and envelopes



Introduction

Electrical break is the classification Caburn-MDC gives to vacuum components consisting of metal tube hardware brazed to either end of a ceramic tube. Components with diameters below 64mm are referred to as breaks and those with diameters above 64mm are referred to as envelopes.

The metal tubes provide a means of attaching these electrical breaks to other vacuum components such as flanges and chambers. The central ceramic portion provides electrical insulation between the conductive metal ends. In other words, the ceramic produces an electrical break in an otherwise continuous tube geometry.

Caburn-MDC offers three break designs for service within cryogenic, liquid and vacuum environments:

Cryogenic breaks are used in the transmission of cryogenic fluids to provide an electrical break in the transmission line. These breaks are suitable for service down to liquid nitrogen temperatures (-200°C). Although rated for cryogenic service, thermal gradients of 25°C per minute must be observed to preserve the life of the seal. These breaks are designed with thin metal transitions that provide flexibility at sub-zero temperatures. Cryogenic breaks can be installed by the tungsten inert gas (TIG) welding process.

Part numbers printed in a light blue colour indicate products that are suitable for -200°C cryogenic applications

Liquid breaks are used for the transmission of coolant fluids to provide an electrical break in the transmission line. Service temperature for these breaks is restricted by coolant temperature limits. Thermal gradients of 25°C per minute must also be observed with these products. These parts are rated for a maximum line pressure of 5 bar. Liquid breaks are typically installed by soldering or low-temperature brazing. Note that subsequent brazing temperatures must not exceed 700°C.

Vacuum breaks and envelopes are used in vacuum transmission lines to provide an electrical break in the transmission line. Note again that thermal gradients of 25°C per minute must be observed to preserve the life of the seal. Weldable vacuum breaks and envelopes are typically installed using any of three fusing processes – laser, electron-beam or TIG welding.

Intended operating conditions

Electrical ratings are safe operating limits. These ratings are determined by various factors, including dielectric strength, geometry and system operating pressure. Please note that all Caburn-MDC catalogue products are electrically rated for operation with one side in dry atmospheric conditions and the other side in a vacuum environment with a maximum system pressure of 1×10^{-4} mbar. We advise that users make allowances for deviations from stated operating parameters and take adequate safety precautions when feedthroughs are operated at high voltages or high currents.

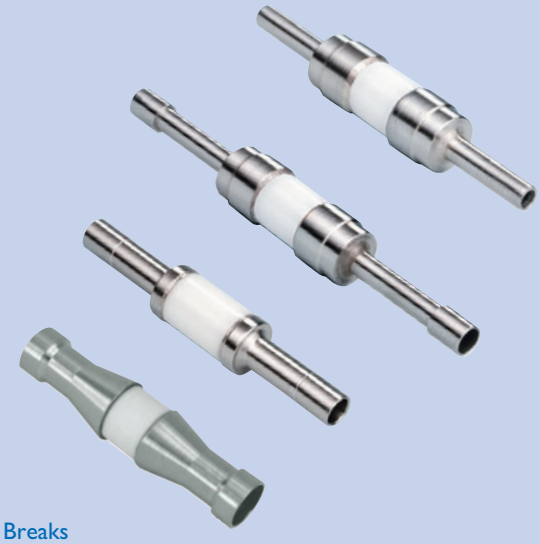
General specifications

Type	Specification voltage/current	Maximum bakeout temperature	Nominal tube sizes
Cryogenic and liquid 	3000 to 6000V DC	CF Flange 450°C ISO KF Flange 150°C Weldable 450°C	3.2, 6.4 8.0, 9.5 11.0, 12.7
Vacuum breaks 	to 15,000V DC	CF Flange 450°C ISO KF Flange 150°C Weldable 450°C	6.4, 9.5, 12.7, 19.1 38.1, 63.5, 102.0 152.0, 203.0
Vacuum envelopes 	to 40,000V DC	CF Flange 450°C ISO KF Flange 150°C Weldable 450°C	6.4, 38.1 63.5, 76.0

All dimensions are nominal in millimetres unless specified

Breaks and envelopes

Cryogenic and liquid



Breaks

Features

- High voltage isolation to 6kV
- Nominal tube sizes from 3.2 to 11.0mm
- Custom feedthrough configurations available upon request

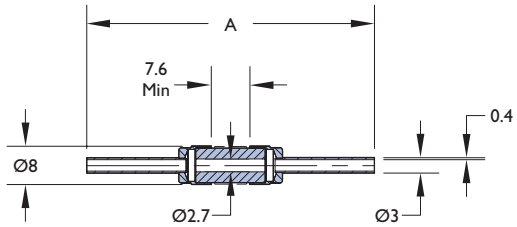
Specifications

Voltage[1]	3,000 to 6,000V DC
Material	
Flanges	304ss
Adaptors	See tables for options
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
Weld or braze type	-200°C to 450°C
Dimensions	Reference only, subject to change

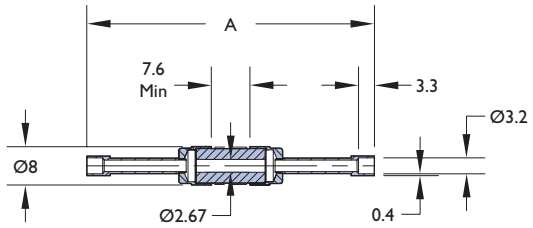
[1] See intended operating parameters in introductory section.

[2] Overall assembly ratings must be adjusted to that of the lowest rated component.

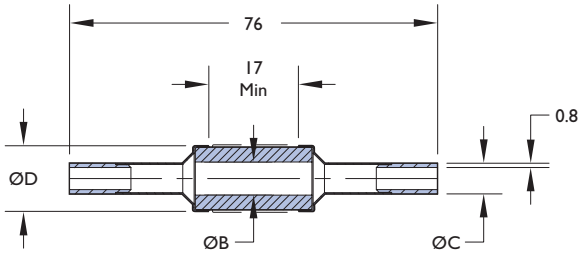
UHV and HV series



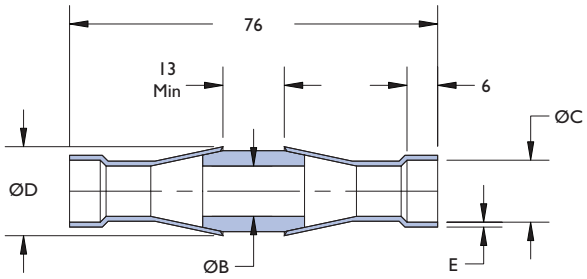
3kV Weld mount Figure 1



3kV Braze mount Figure 2



6kV Weld mount Figure 3



5kV Braze mount Figure 4

All dimensions are nominal in millimetres unless specified

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Breaks and envelopes

Cryogenic and liquid

Cryogenic breaks

Nominal tubes	Figure	Volts	Type	Adaptor material	A	Reference	Part number
3.2	1	3000	Weld	Stainless steel	46	CYB3	9611002
3.2	1	3000	Swage	Stainless steel	58	CYB3-SW	9611003

Part numbers printed in light blue indicate products that are suitable for -200°C cryogenic applications

Nominal tubes	Figure	Volts	Type	Adaptor material	A	Reference	Part number
3.2	2	3000	Braze	Stainless steel	58	CYB3-BR	9611004

Nominal tubes	Figure	Volts	Type	Adaptor material	B	C	D	Reference	Part number
7.9	3	6000	Weld	Stainless steel	6.8	7.9	14	CYB6	9611000
6.4	3	6000	Weld	Stainless steel	6.8	6.4	14	CYB6T	9611005
11.0	3	6000	Weld	Stainless steel	10.9	11.0	20	CYB6L	9611001
9.5	3	6000	Weld	Stainless steel	10.9	9.5	20	CYB6LT	9611006

Part numbers printed in light blue indicate products that are suitable for -200°C cryogenic applications

Brazable

Nominal tubes	Volts	Type	Adaptor material	B	C	D	E	Reference	Part number
6.4	5000	Braze	Copper	5	6	15	0.8	WB5-1/4	9621000
9.5	5000	Braze	Copper	6	10	15	0.8	WB5-3/8	9621001
12.7	5000	Braze	Copper	10	13	19	1.0	WB5-1/2	9621002

All dimensions are nominal in millimetres unless specified

Breaks and envelopes

Vacuum breaks to 15,000V

Breaks

Features

- High-voltage isolation
- Nominal tube sizes from 19 to 38mm
- 3 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

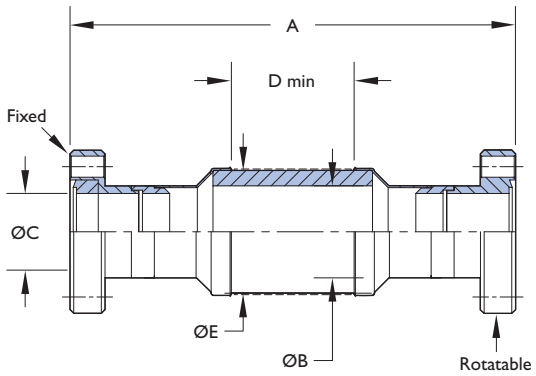
Specifications

Voltage[1]	3,000 to 15,000V DC
Material	
Flanges	304ss
Adaptors	304ss
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
Weld or braze type	-100°C to 450°C
CF Flange mounted feedthrough	-100°C to 450°C
ISO KF Flange mounted feedthrough	-20°C to 150°C
Weldable break	-100°C to 450°C
Dimensions Reference only, subject to change	

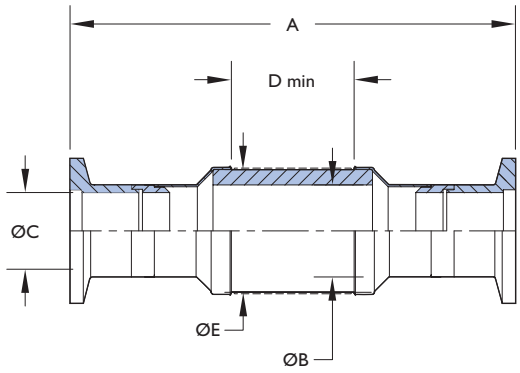
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

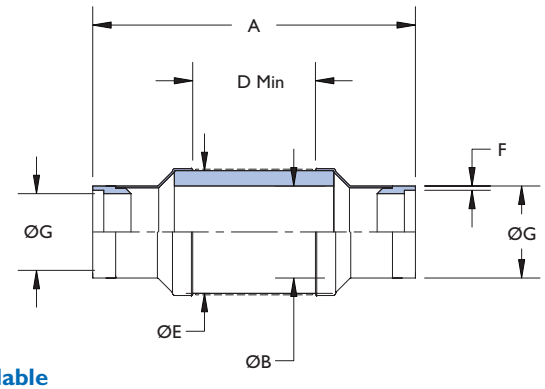
UHV and HV series



CF Flange mount



ISO KF Flange mount



Weldable

All dimensions are nominal in millimetres unless specified

Breaks and envelopes

Vacuum breaks to 15,000V

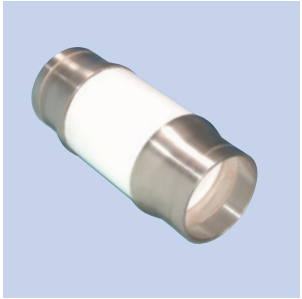
CF

Nominal tubes	Volts	Flange mount	A	B	C	D	E	Reference	Part number
19.1	10kV	DN16CF	92	19.1	16	25	27	CB10-133	**9632000**
38.1	3kV	DN40CF	67	31.8	35	6	42	CB3-275	**9632001**
38.1	15kV	DN40CF	107	31.8	35	51	42	CB15-275	**9632002**

ISO KF

Nominal tubes	Volts	Flange mount	A	B	C	D	E	Reference	Part number
19.1	10kV	DN16KF	92	19.1	16	25	26	K075-CB10	**9633000**
38.1	3kV	DN40KF	64	31.8	35	6	42	K150-CB3	**9633001**
38.1	15kV	DN40KF	102	31.8	35	51	42	K150-CB15	**9633002**

Weldable



Nom. tubes	Volts	Flange mount	A	B	C	D	E	F	G	Reference	Part number
19.1	10kV	Stainless steel	66	19	19	25	26	0.8	16	CB10	**9631000**
38.1	3kV	Stainless steel	58	32	38	6	42	1.6	35	CB3	**9631001**
38.1	15kV	Stainless steel	96	32	38	48	42	1.6	35	CB15	**9631002**

All dimensions are nominal in millimetres unless specified

Breaks and envelopes

Vacuum breaks to 15,000V

Breaks

Features

- High voltage isolation
- Nominal tube sizes from 63 to 203mm
- 2 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

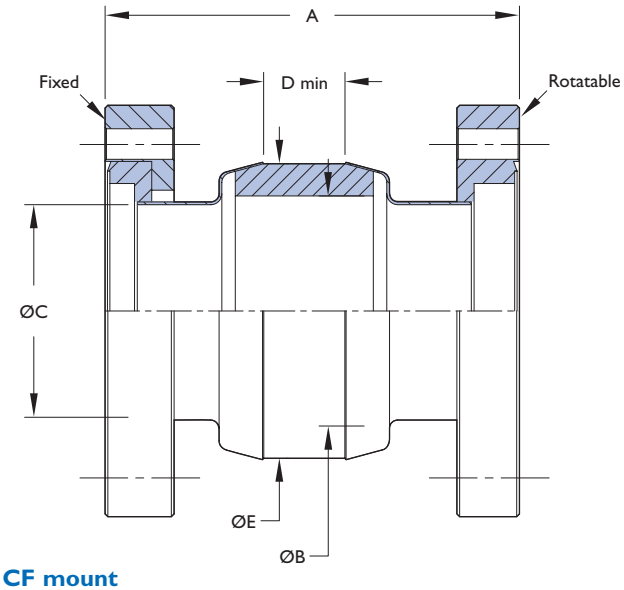
Specifications

Voltage[1]	3,000 to 15,000V DC
Material	
Flanges	304ss
Adaptors	See tables
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted	-100°C to 450°C
Weldable envelope	-100°C to 450°C
Dimensions	Reference only, subject to change

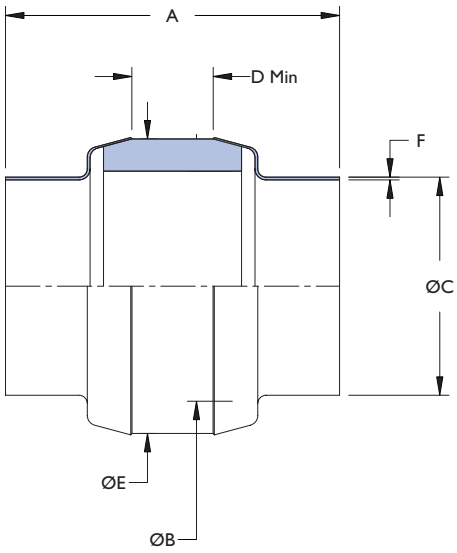
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

UHV and HV series



CF mount



Weldable

Nominal tubes	Volts	Flange mount	A	B	C	D	E	Reference	Part number
63.5	8kV	DN63CF	114	63	59	19	82	CB8-450	**9632003**
101.6	8kV	DN100CF	117	89	95	19	108	CB8-600	**9632004**
152.4	15kV	DN160CF	140	152	152	38	176	CB15-800	**9632005**
203.2	15kV	DN200CF	146	197	197	38	224	CB15-1000	**9632006**

Nominal tubes	Volts	Material	A	B	C	D	E	F	Reference	Part number
63.5	8kV	Kovar®	92	63	60	19	82	.76	CB8	**9631003**
101.6	8kV	Kovar®	91	89	96	19	108	.76	CB8L	**9631004**
152.4	15kV	Kovar®	114	152	152	38	176	1.0	CB15L	**9631005**
203.2	15kV	Kovar®	118	197	198	38	223	1.0	CB15LL	**9631006**

All dimensions are nominal in millimetres unless specified

Breaks and envelopes

Vacuum envelopes to 40,000V

Envelopes

Features

- High voltage isolation
- Nominal tube sizes from 12.7 to 76mm
- 2 standard vacuum mounting styles
- Custom feedthrough configurations available upon request

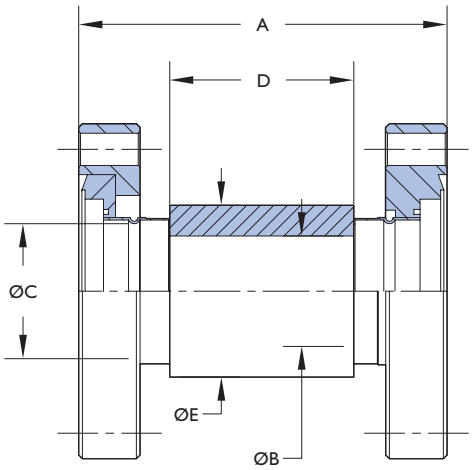
Specifications

Voltage[1]	to 40,000V DC
Material	
Flanges	304ss
Adaptors	See tables
Insulation	Alumina ceramic
Vacuum range UHV/HV	1×10^{-10} mbar/1×10^{-8} mbar
Temperature range[2]	
CF Flange mounted	-100°C to 450°C
Weldable envelope	-100°C to 450°C
Dimensions	Reference only, subject to change

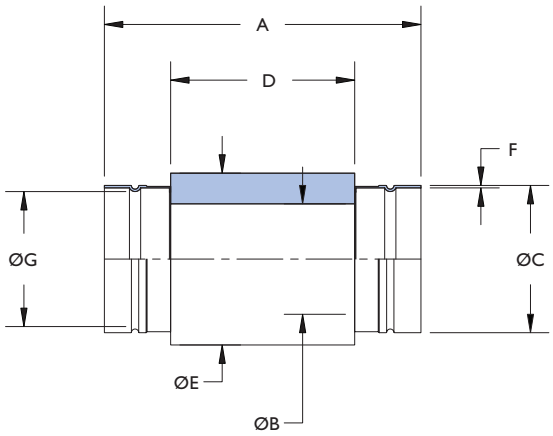
[1] See intended operating parameters in introductory section

[2] Overall assembly ratings must be adjusted to that of the lowest rated component

UHV and HV series



CF mount



Weldable

Nominal tubes	Volts	Flange mount	A	B	C	D	E	Reference	Part number
12.7	10 kV	DN16CF	47	8	12	19	16	CB10C-133	**9632007**
38.1	20 KV	DN40CF	76	23	27	38	36	CB20C-275	**9632008**
63.5	30 KV	DN63CF	102	51	57	51	64	CB30C-450	**9632009**
76.2	40 KV	DN100CF	122	63	68	76	76	CB40C-600	**9632010**

Nominal tubes	Volts	Material	A	B	C	D	E	F	G	Reference	Part number
12.7	10kV	Kovar®	39	8	13	19	16	0.5	12	CB10L	**9631007**
38.1	20kV	Kovar®	65	23	30	38	36	0.5	27	CB120L	**9631008**
63.5	30kV	Kovar®	85	51	60	51	63	0.6	57	CB30L	**9631009**
76.2	40kV	Kovar®	11	63	71	76	76	0.6	68	CB40L	**9631010**

All dimensions are nominal in millimetres unless specified

Connectors and cables

Introduction

An electrical connector is a device that forms the interface between the electrical feedthrough and its attached wiring. They are an essential accessory for the user of electrical feedthroughs as power must be transmitted between the application within the vacuum and the external or air-side instrumentation.

Caburn-MDC offers a wide variety of electrical connectors for service in air or vacuum environments. Most connectors featured in this section are either included or used with the standard electrical feedthroughs in this catalogue. Please refer to the following specification table for the general characteristics of each connector and refer to the relevant page numbers where full descriptions, recommendations and wiring instructions may be found.

General specifications

Type	Specifications		Temperature range
Circular 3-7 pins 	**Voltage rating** **Current rating** **Maximum current** All pins loaded	500V Peak 3.5A max / pin 3 pin – 6A, 5 pin – 10A, 7 pin – 15A	20°C to 65°C
MS Circular 2-35 pins 	**Voltage rating** **Current rating** **Maximum current** All pins loaded	700V Peak 10A / pin 4 pin – 28A, 6 pin – 36A 10 pin – 50A, 20 pin – 75A, 35 pin – 100A	-200°C to 350°C
Circular 12,000 volts 	**Voltage rating** **Current rating** **Maximum current** All pins loaded	12,000V Peak 7.5A / pin 7 pin – 38A	-55°C to 125°C
BNC 	**Impedance** **Frequency range** **Voltage rating** **Dielectric withstanding voltage** **VSWR**	50□ Nominal 0-4GHz with low reflection, usable to 11GHz 500V Peak 1,500V RMS TFE insulator 1.3 maximum 0-4GHz	-65°C to 165°C
MHV 	**Impedance** **Frequency range** **Voltage rating** **Current rating**	Non-constant 0-50MHz 5,000V Peak 5A Maximum	-65°C to 165°C
SHV-5 	**Impedance** **Voltage rating** **Current rating**	Non-constant 5,000V Peak 5A Maximum	-65°C to 165°C

All dimensions are nominal in millimetres unless specified

General specifications

Type	Specifications		Temperature range
Type-N 	**Impedance**	50□ Nominal	-65°C to 165°C
	Frequency range	0-11GHz with flexible cable	
	Voltage rating	1,500V Peak	
	Dielectric withstanding voltage	2,500V RMS TFE insulator	
	VSWR	1.3 maximum 0-11GHz	
SMA 	**Impedance**	50□ Nominal	-65°C to 165°C
	Frequency range	0-12.4GHz with flexible cable	
	Voltage rating	500V Peak	
	Dielectric withstanding voltage	10,000V RMS with RG58 group	
	VSWR	1.25 maximum 0-12.4GHz	
SMB 	**Impedance**	50□ Nominal	-65°C to 165°C
	Frequency range	0-10GHz	
	Voltage rating	500V Peak	
	Dielectric withstanding voltage	1,500V RMS	
	VSWR	1.25 max 0-12.4GHz, 1.5 max 4-10GHz	
SH-B 	**Impedance**	Non-constant	-200°C to 300°C
	Voltage rating	7,500V Peak	
SHV-10 and 20 	**Impedance**	Non-constant	-65°C to 85°C
	Frequency range	10,000V Peak / 20,000V peak	
Microdot® 	**Complete with 3m long cable**		to 125°C air
	Impedance	50□ Nominal	-65°C to 165°C
	Frequency range	0-2GHz	
	Voltage rating	500V Peak	
	Dielectric withstanding voltage	1,000V RMS at sea level	
	VSWR	1.2 max 0-12GHz	
Thermocouple 	**Impedance**	50□ Nominal	to 350°C
	Frequency range	0-2GHz	
	Voltage rating	500V Peak	
	Dielectric withstanding voltage	1,000V RMS at sea level	
	VSWR	1.2 maximum 0-2GHz	

All dimensions are nominal in millimetres unless specified

Connectors and cables

Introduction

General specifications

Type	Specifications		Temperature range
Miniature TC 	**Voltage rating** **Current rating**	mV mA	+20°C to 125°C
PowerBoot® 	**Voltage rating** **Current rating**	5,000V or 20,000V to 25A	-20°C to 150°C
Crimp connector 	**Impedance** **Frequency range** **Voltage rating** **Dielectric withstanding voltage**	50□ Nominal 0-12.4GHz with flexible cable 500V Peak 1,000V RMS with RG58 group	200°C
TC Screw and nut sets 	Slotted screw with hex nut		to 450°C
TC Crimp push 	Chromel®, Alumel®, Iron, Constantan J, Constantan E&T and Nickel-200		to 350°C
Power crimp 	BeCu		to 150°C Air to 200°C Vacuum

All dimensions are nominal in millimetres unless specified

Connectors and cables

Introduction

General specifications

Type	Specifications	Temperature range
Power push-on 	BeCu	to 150°C Air to 200°C Vacuum
Power in-line 	BeCu	to 150°C Air to 200°C Vacuum
In-line clamp connectors 	Copper	
Right-angle connectors 	Copper	
Sub-D 	Male and female contacts Ni-Fe alloy, gold plated	to 250°C

All dimensions are nominal in millimetres unless specified

Connectors and cables

Circular connectors – 3 to 7 pins

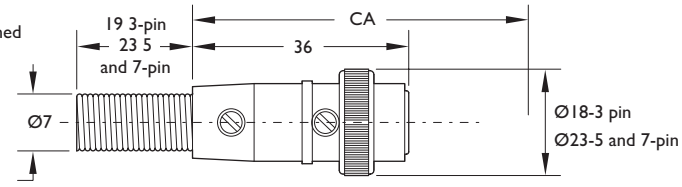
To 500V ¡ to 3.5A ¡ air service to 65° C

CON-C3

CON-C5

CA

Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.



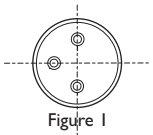


Figure 1

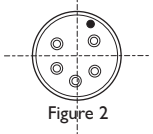


Figure 2

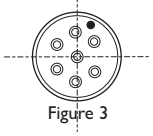
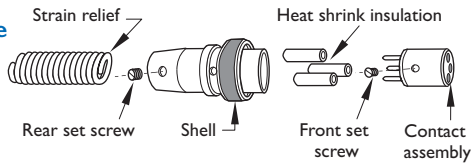


Figure 3

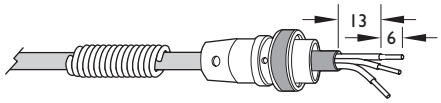
Parts nomenclature



Description

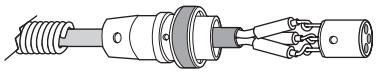
Three, five and seven pin circular connectors are not industry standard connectors. These connectors have been developed by Caburn-MDC for applications requiring moderate pin density while maintaining relatively small package size. They are screw type connectors which offer the dependability of a threaded coupling. Standard dielectric material for these circular connectors is PVC. They are fitted with female socket receptacles that mate with 0.81mm diameter pins.

Wiring instructions

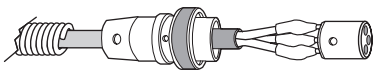


Step 1

Step 1 Slide strain relief spring and shell over cable. Strip cable and individual conductors as detailed. Wet conductor with 60 – 40 tin lead solder.

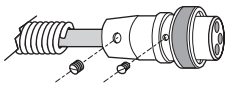

Step 2

Step 2 Slide heat shrink[1] insulation over each conductor. Coil each conductor to fit over contacts. Solder in place using 60 – 40 tin lead solder. Contacts on five and seven pins should be bent inward slightly to allow fitting of coiled conductors. If conductors are not suitable for coiling use a straight lap with adequate solder.


Step 3

Step 3 Slide the heat shrink[1] cable insulation over each solder joint covering all exposed metal. Heat and shrink insulation at approximately 135°C.

[1] Not required with five and seven pin connector


Step 4

Step 4 Slide shell over contact assembly. Align shell and contact assembly holes and fasten front set screw. (Note that set screws are actually on opposite sides of shell but are shown in drawing on the same side for clarity.) Slide strain relief into shell and fasten rear set screw. Five and seven pin connectors use a threaded adaptor to fasten strain relief.

Description	Volts	Amps	Number of pins	Figure	Reference	Part number
Circular connector	500	3.5	3	1	CON-C3	**9921000**
Circular connector	500	3.5	5	2	CON-C5	**9921001**
Circular connector	500	3.5	7	3	CON-C7	**9921002**

All dimensions are nominal in millimetres unless specified

Caburn-MDC Europe Limited **Telephone +44 (0)870 428 7646** **www.caburn.co.uk**

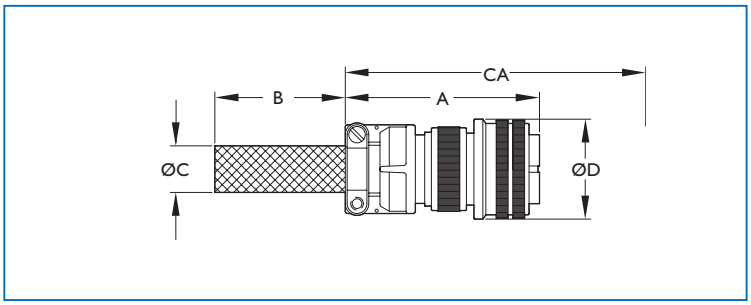
CABURN MDC EUROPE

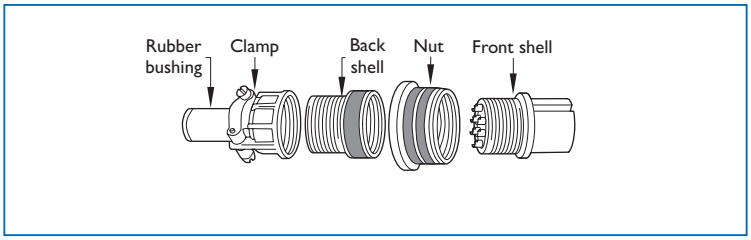
Connectors and cables

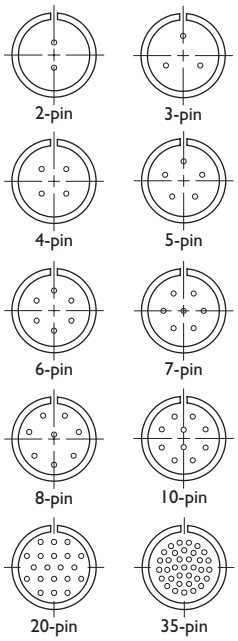
Circular MS connectors – 2 to 35 pins

To 1,750V ¡ to 23A ¡ air service to 125°C

CON-C3



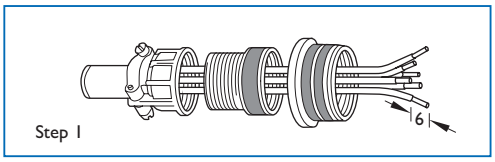




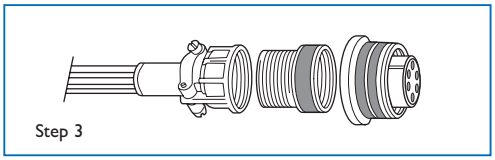
Description

The MS prefix in a connector reference number indicates an approved status under the current military specification MIL-C-5015. MS-3106A are solid-shell straight plug threaded connectors with polarizing keyways; all are female socket type suitable for connecting with male pin type receptacles. Standard dielectric materials for these MS connectors is Diallyl Phthalate; this resin is dimensionally stable, has high arc resistance and high insulation resistance under both humidity and thermal stress. Contacts are silver plated and have pre-

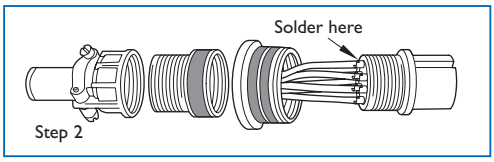
Wiring instructions



Step 1 Slide the cable clamp, rubber bushing, back shell and nut (in that order) over cable, then strip each conductor 6mm as detailed.



Step 3 Slide nut over front shell, then thread back shell on to front shell and tighten. Slide rubber bushing into clamp, then thread the clamp on to back shell and tighten. Moderately tighten clamp screws to provide adequate strain relief to wire and contact solder joints.



Step 2 Insert each conductor in the corresponding contact solder cup (note that contacts are identified in a clockwise pattern by alphabetical markings on insulator) then solder in place using a non acid core 60 – 40 tin lead solder.

Description	MS Number	Volts	Amps	Number of pins	Pin size	A	B	C	D	Reference	Part number
MS Connector	MS-3106A-16-11S	700	23	2	2.29	61	48	11	32	CON-MS2	**9921008**
MS Connector	MS-3106A-22-9S	1750	23	3	2.29	69	41	16	41	CON-MS3	**9921009**
MS Connector	MS-3106A-20-4S	1250	23	4	2.29	69	41	16	37	CON-MS4	**9921010**
MS Connector	MS-3106A-18-4S	1250	13	4	1.52	66	43	14	34	CON-MS4B	**9921005**
MS Connector	MS-3106A-18-11S	700	23	5	2.29	66	43	14	34	CON-MS5	**9921011**
MS Connector	MS-3106A-18-12S	700	13	6	1.52	66	43	14	34	CON-MS6	**9921006**
MS Connector	MS-3106A-18-15S	700	23	7	2.29	69	41	16	37	CON-MS7	**9921012**
MS Connector	MS-3106A-24-6S	700	23	8	2.29	74	36	19	44	CON-MS8	**9921013**
MS Connector	MS-3106A-18-1S	700	13	10	1.52	66	46	14	34	CON-MS10	**9921003**
MS Connector	MS-3106A-28-16S	700	13	20	1.52	74	36	19	50	CON-MS20	**9921004**
MS Connector	MS-3106A-36-15S	700	13	35	1.52	76	33	32	63	CON-MS35	**9921014**

All dimensions are nominal in millimetres unless specified

Connectors and cables

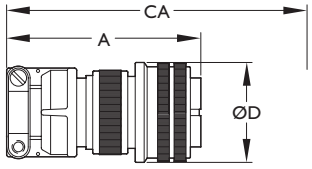
Circular MS connectors – 4 to 35 pins

To 700V ¡ to 10A ¡ air and vacuum service to 350°C

CON23-IV10

CA

Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.



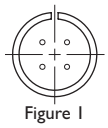


Figure 1

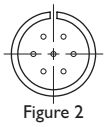


Figure 2

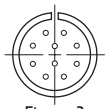


Figure 3

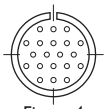


Figure 4

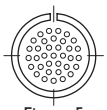
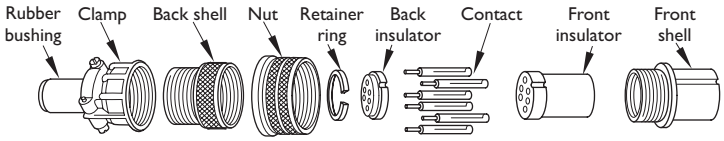


Figure 5

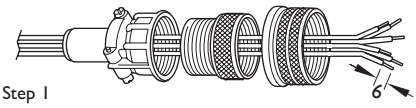
Parts nomenclature



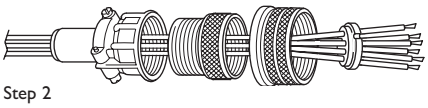
Description

Although these connectors do not carry the MS prefix, they are of the MS type. Other than the alumina ceramic dielectric, these connectors meet standard specifications for MIL-C-5015 connectors. They are solid shell straight plug threaded connectors with polarizing keyways. The female socket contacts are Alumel®, a high nickel alloy suitable for service in air or vacuum and bakeable to 350°C. The metal shell components are nickel plated aluminium with low vapour pressure characteristics, unlike standard MS circular connectors which are cadmium plated and not suitable for UHV.

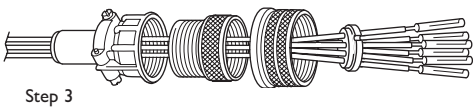
Wiring instructions



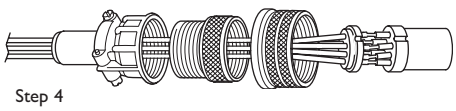
Step 1 Slide the cable clamp, back shell and nut (in that order) over cable, then strip each conductor 6mm as detailed.



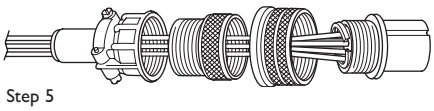
Step 2 Remove retainer ring from front shell and disassemble by sliding insulators and contacts. Note that insulator consists of front and back pieces. Insert wires through the appropriate sides in back insulator before crimping contacts.



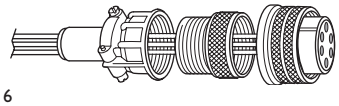
Step 3 Slide contacts on to wire and crimp in place.



Step 4 Insert crimped contacts into appropriate holes in front insulator. Note alignment slots on insulators.



Step 5 Slide the front and back insulators together and insert them into the front shell. Secure them in place with the retainer ring.



Step 6 Slide the nut over the front shell, then thread the back shell on to the front shell and tighten. Thread the clamp on to the back shell and tighten. Moderately tighten clamp screws to provide adequate strain relief to wire and contacts.

Description	Volts	Amps	Number of pins	Pin size	Figure	A	B	Reference	Part number
MS Connector	700	10	4	1.42	1	66	34	CON-IV4	**9921015**
MS Connector	700	10	6	1.42	2	66	34	CON-IV6	**9921016**
MS Connector	700	10	10	1.42	3	66	34	CON-IV10	**9921017**
MS Connector	700	10	20	1.42	4	74	50	CON-IV20	**9921018**
MS Connector	700	10	35	1.42	5	76	63	CON-IV35	**9921019**

All dimensions are nominal in millimetres unless specified

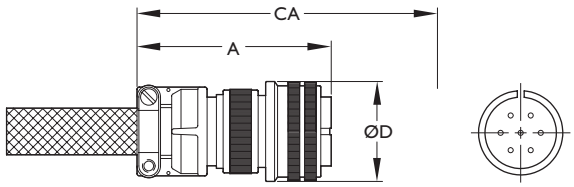
Connectors and cables

Circular MS connectors – 7 pins / 12 kV

12,000V ¡ 17.5A ¡ air service to 125° C

Circular

CA
Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.



Description

High voltage MS style circular connectors are designed for use with Caburn-MDC's 12kV multi-pin feedthroughs.

Connector shell components are constructed of 6016-T6 aluminium alloy and are electroless nickel plated per MIL-C-26074.

High-voltage insulation is provided by a single piece, molded silicone rubber insert per ZZ-R-765.

Female socket contacts are made of commercial bronze and gold plated per MIL-C-4520.

To insure proper electrical performance the connector wiring instructions must be strictly adhered to.

Wiring instructions

The instructions presented herein must be used in conjunction with connector wiring document number 987001 supplied with each connector. If you would like to receive a copy of this document before purchasing a connector, please contact technical sales.

Step 1 Grit blast or abrade the ID of shell (back end only), backshell and the entire OD of snap ring, using a medium grit sand media. Mask off as required and clean with acetone after grit blasting.

Step 2 Prime ID of shell (back end only) with primer (A) and ID of backshell and entire snap ring with primer (B).

Step 3 Lightly abrade large OD and back end of insulator using medium grit emery cloth. Clean with acetone.

Step 4 Apply thin smooth layer of adhesive to large OD of insulator. Align with keyway and slide into shell until it bottoms out. Wipe any excess adhesive with a cotton swab. Insert snap ring behind insulator and check insulator depth as detailed. Let adhesive cure for a minimum of 12 hours before proceeding to step 5.

Step 5 Lightly abrade back end of insulator and wire insulation approximately 1 inch from the end, using medium grit emery cloth. Wipe clean with isopropyl alcohol or acetone.

Step 6 Strip insulation on each conductor $\frac{3}{16}$" to $\frac{1}{4}$" from ends, being careful not to nick or cut conductor strands.

Step 7 Crimp socket contacts to exposed conductors, using specified crimp tool. Crimp tool should be set to .040" closure diameter as required for #20-AWG wires.

Step 8 Thoroughly clean wires and contacts with isopropyl alcohol or acetone.

Step 9 Prime back end of contacts using primer (A) and let dry for a minimum of 1 hour before applying adhesive.

Step 10 Apply thin smooth layer of adhesive to the same areas primed in step 9 and approximately $\frac{1}{4}$" of the wire insulation. Push crimped contacts and wires into back end of insulator, using a twisting motion, until contacts "POP" into place. Let adhesive cure for a minimum of 12 hours.

Step 11 Thread backshell onto shell until it bottoms out. Hand tighten.

Step 12 Pot the back end of shell assembly using the specified potting compound. Cure for at least 12 hours @ 50% RH minimum before handling and 24 hours before testing.

Step 13 Thread cable strain relief and clamp to cable as required.

Description	Volts	Amps	Number of pins	Pin size	A	B	Reference	Part number
Circular connector	12kV	7.5	7	1.27	59	29	CON-CC7	**9921020**

All dimensions are nominal in millimetres unless specified

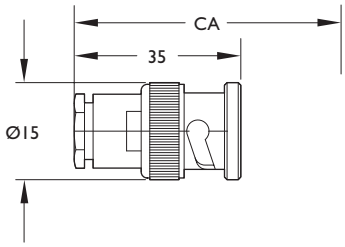
Connectors and cables

Coaxial – BNC

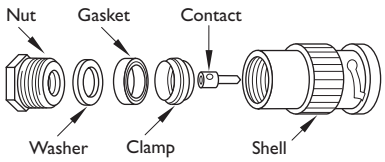
Air service to 165° C

CON-BNC

CA
Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.



Parts nomenclature



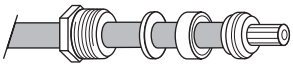
Description

Bayonet naval connectors, BNCs are the world's most popular 50□ RF connectors. BNC connectors are miniature, light-weight units designed to operate satisfactorily up to 11GHz. These connectors typically yield low reflection up to 4GHz on 5□ cables. Their quick disconnect bayonet coupling is a key feature.

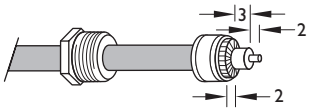
Wiring instructions

Step 1 Cut and strip jacket to 7mm as shown.

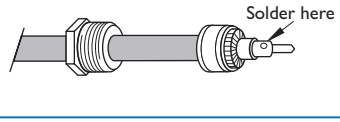
Step 2 Comb out braid and taper toward conductor.



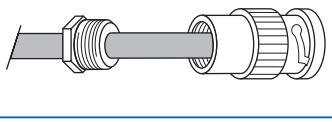
Step 3 Slide nut, washer and gasket over cable, then slide the clamp over the braid so that its inner shoulder bottoms out against cable jacket end.



Step 4 With clamp in place, comb braid back over clamp and trim to 2mm from the end. Trim dielectric to 3mm leaving an exposed conductor length of 2mm. Do not nick conductor. Wet conductor using a non acid core 60 - 40 tin lead solder.



Step 5 Slide contact pin on to conductor until it butts with dielectric, solder in place using a 60 - 40 tin lead solder. Be sure to remove excess solder. Do not overheat cable dielectric as swelling may prevent insertion of cable into shell.



Step 6 Slide cable into shell as far as it will go. Then slide nut into shell and screw in place with wrench until tight. Make sure to hold cable and shell rigid while rotating nut.

Description	MS number	Volts	Use cable	Reference	Part number
Coaxial – BNC Connector	UG-88U	5000	RG58B/U	CON-BNC	**9922000**

All dimensions are nominal in millimetres unless specified

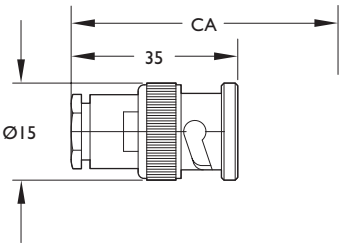
Connectors and cables

Coaxial – MHV

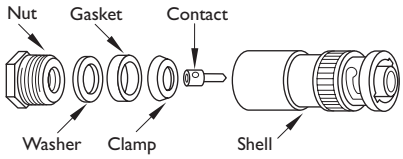
Air service to 165° C

CON-MHV

CA
Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.



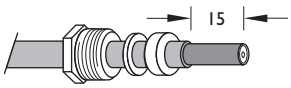
Parts nomenclature



Description

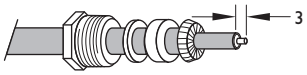
Miniature high-voltage, (MHV) connectors are also known as high voltage BNCs but do not inter-mate with BNC connectors. They are designed for applications which must withstand a pulsed signal up to 5000V peak. MHV connectors operate to 50MHz with a non-constant impedance structure.

Wiring instructions

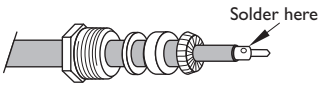


Step 1 Slide nut, washer and gasket (with V groove toward cable end) over cable jacket. Cut and strip cable jacket to 15mm as shown.

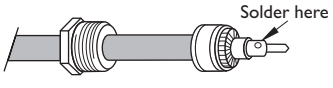
Step 2 Comb out braid and taper toward conductor.



Step 3 Slide clamp over braid (small end toward cable end) and push back against cable jacket. Fold braid wires back over clamp and trim flush at large end of clamp. Cut dielectric exposing 3mm conductor length as shown. Do not nick conductor. Wet exposed conductor using a non acid core 60 – 40 tin lead solder; do not overheat.



Step 4 Slide contact on to conductor and solder in place using 60 – 40 tin lead solder. Remove excess solder. Do not overheat cable dielectric as swelling may prevent cable insertion into shell.



Step 5 Slide cable assembly into shell as far as it will go. Then slide nut into shell and screw in place with wrench until tight. Make sure to hold cable and shell rigid while rotating nut.

Description	MS number	Volts	Use cable	Reference	Part number
Coaxial – BNC Connector	UG-88U	5000	RG58B/U	CON-MHV	**9922001**

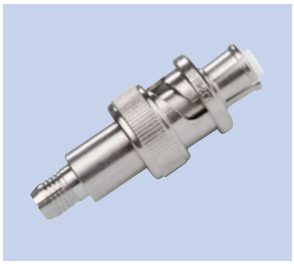
All dimensions are nominal in millimetres unless specified

Connectors and cables

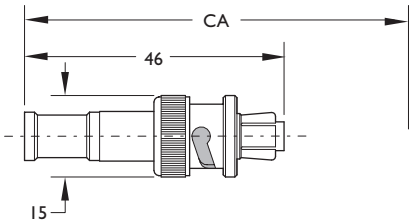
Coaxial – SHV-5

Air service to 165° C

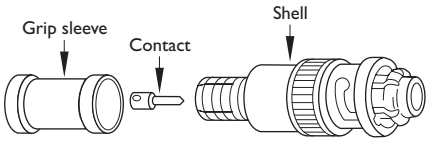
CON-SHV-5



CA
Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.

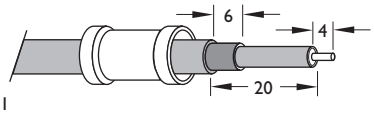


Parts nomenclature

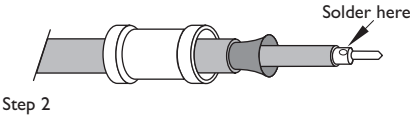


Description
Safe high voltage 5kV connectors feature improved interface over the MHV series connectors. The SHV-5 outer contact ground connection is maintained through the entire centre contact mating cycle. The centre contacts are recessed to prevent shock hazards when the connectors are unmated.

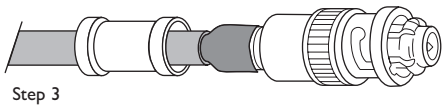
Wiring instructions



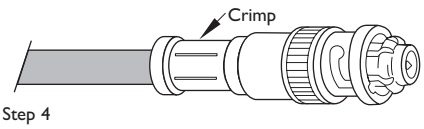
Step 1 Slide grip sleeve over cable jacket. Cut and strip cable jacket, braided shield and dielectric to dimensions shown. Do not nick conductor.



Step 2 Wet exposed conductor using a non acid core 60 – 40 tin lead solder, then slide contact on conductor and solder in place. Do not over heat cable dielectric, as swelling may prevent insertion of cable into shell. Flare braid as shown without fraying.



Step 3 Slide cable assembly into shell as far as it will go. At this stage the shell grip fingers should be under the flared braid as shown.



Step 4 Slide grip sleeve forward over braid and bottom out against shell; crimp in pace using Kings crimp tool number KTH-1000 and crimp die number KTH-2062.

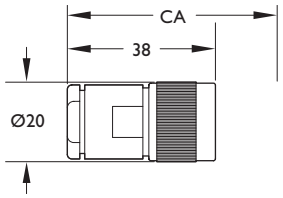
Description	MS number	Volts	Use cable	Reference	Part number
Coaxial – SHV-5	UG-932U	5000	RG59B/U	CON-SHV-5	**9922002**

All dimensions are nominal in millimetres unless specified

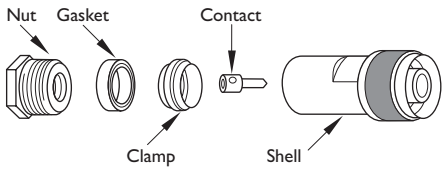
Air service to 165° C

CON-N

CA
Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.



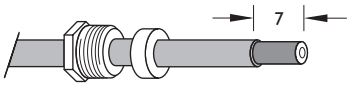
Parts nomenclature



Description

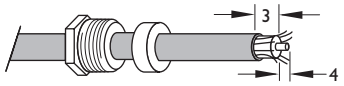
Type-N connectors are medium size, weatherproof, threaded coupling units designed for use from DC to 11GHz. VSWR is consistently low across this broad frequency range. They are impedance matched to 50□ cables.

Wiring instructions



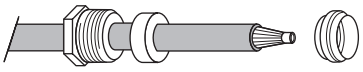
Step 1

Step 1 Slide nut, gasket (with V groove toward cable end) over cable jacket as shown. Cut and strip cable jacket to 7mm length as shown.



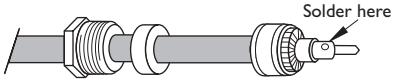
Step 2

Step 2 Comb out braid and fan out radially. Cut and strip dielectric to expose 4mm conductor length. Do not nick conductor.



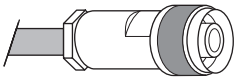
Step 3

Step 3 Pull braid forward and taper toward conductor then slide clamp over braid (tapered end first) and bottom out against cable jacket.



Step 4

Step 4 Fold braid back over clamp and trim to 3mm length. Wet conductor using a non acid core 60 – 40 tin lead solder, then slide contact on and solder in place. Do not overheat cable dielectric as swelling may prevent insertion of cable into shell.



Step 5

Step 5 With gasket properly seated on clamp, slide cable assembly into shell as far as it will go. Slide nut into shell and screw in place with wrench until tight. Make sure to hold cable and shell rigid while rotating nut.

Description	MS number	Volts	Use cable	Reference	Part number
Coaxial – Type-N Connector	UG-21D/U	1500	RG214/U	CON-N	**9922003**

All dimensions are nominal in millimetres unless specified

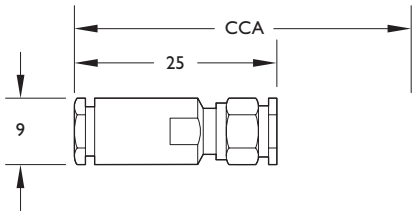
Connectors and cables

Coaxial – SMA

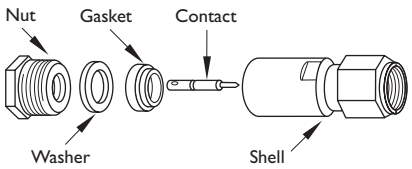
Air service to 165° C

CON-SMA

CA
Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.

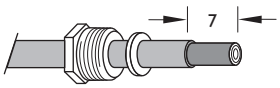


Parts nomenclature



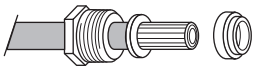
Description
SMA connectors are semi-precision, subminiature, high frequency connectors which offer reliable broadband performance DC to 12.4 GHz with low reflection and constant 50□ impedance.

Wiring instructions



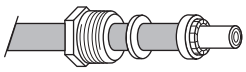
Step 1

Step 1 Slide nut and gasket over cable jacket as shown. Cut and strip jacket exposing braid by 7mm length.



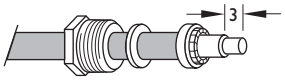
Step 2

Step 2 Comb out braid and taper forward towards conductor. Then slide clamp over braid until it bottoms out on cable jacket.



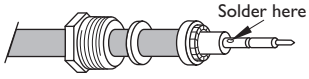
Step 3

Step 3 Fold braid wire back over clamp and trim as necessary so that they are clear of clamp shoulder.



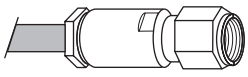
Step 4

Step 4 Cut and trim dielectric exposing conductor to 3mm length. Do not nick conductor. Wet conductor using a non acid core 60 – 40 tin lead solder. Do not overheat.



Step 5

Step 5 Slide contact on to conductor and solder in place holding squarely against dielectric. Remove excess solder. Do not overheat cable dielectric as swelling may prevent insertion of cable into shell.



Step 6

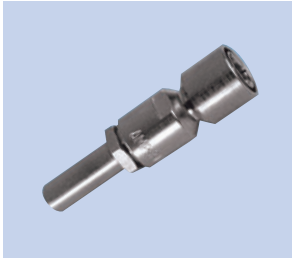
Step 6 Slide cable assembly into shell as far as it will go. Slide nut into shell and screw in place with wrench until tight. Hold cable and shell rigid while rotating nut.

Description	Volts	Use cable	Reference	Part number
Coaxial – SMA Connector	700	RG58B/U	CON-SMA	**9922004**

All dimensions are nominal in millimetres unless specified

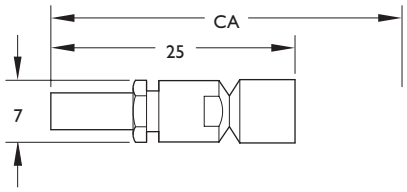
Air service to 165° C

CON-SMB

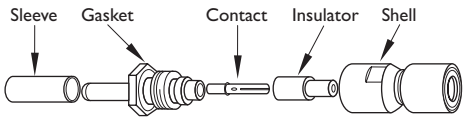


CA

Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.



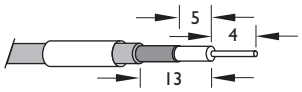
Parts nomenclature



Description

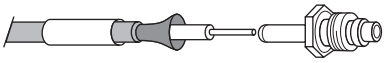
SMB connectors feature quick connect and disconnect snap-on mating and are suitable for 50□ impedance structures.

Wiring instructions



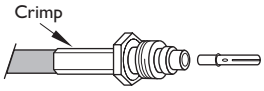
Step 1

Step 1 Slide grip sleeve over cable jacket. Cut and strip cable jacket, braid and dielectric to dimensions shown. Make all cuts sharp and square. Do not nick braid, dielectric or centre conductor. Wet conductor using a non acid core 60 – 40 tin lead solder. Do not overheat.



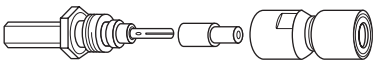
Step 2

Step 2 Slightly flare braid as shown. Do not fray. Slide nut on to cable so that stem slides under braid. Push until dielectric bottoms out inside nut.



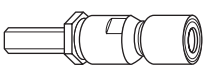
Step 3

Step 3 Slide grip sleeve forward over braid and butt against nut. Remove all slack in braid. Crimp grip sleeve with crimp tool while keeping cable dielectric bottomed out inside nut. Slide contact onto pre wetted conductor and solder in place using non acid flux. Do not get solder on outside surface of contact.



Step 4

Step 4 Slide insulator over contact then slide cable assembly into shell. Screw together using wrench, hold cable assembly stationary while rotating shell.



Step 5

Description	Volts	Use cable	Reference	Part number
Coaxial – SMB Connector	500	RG17A/U	CON-SMB	**9922007**

All dimensions are nominal in millimetres unless specified

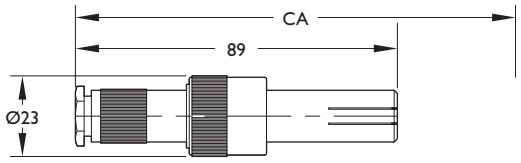
Connectors and cables

Coaxial – SHV-B

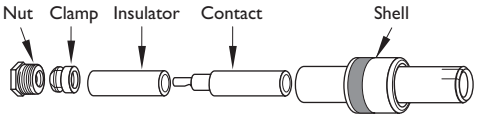
Air service to 300° C

CON-SHV-B

CA
Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.



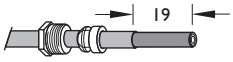
Parts nomenclature



Description

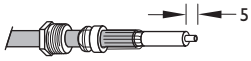
Safe high voltage 7.5kV bakeable connector. These connectors are not industry standard coaxial connections, but developed to meet the demands of process temperatures as high as 300°C. The difference between SHV-B and conventional connectors is the use of alumina ceramic dielectric and crimp style contact connections.

Wiring instructions



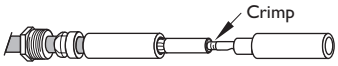
Step 1

Step 1 Slide nut and clamp over cable jacket. Cut and strip jacket exposing 19mm braid length. Do not nick braid.



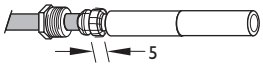
Step 2

Step 2 Comb out braid and fold back over cable jacket. Cut and strip dielectric exposing 5mm conductor length. Do not nick conductor.



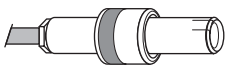
Step 3

Step 3 slide insulator over cable until braid is covered. Slide contact on to conductor and crimp in place as shown. Do not solder.



Step 4

Step 4 Slide insulator forward over crimp joint and butt against contact assembly. Fold braid out and slide clamp forward to meet braid and butt against insulator. Form braid around clamp and trim to 5mm length as shown.



Step 5

Step 5 Slide cable assembly and nut into shell and moderately tighten nut with wrench. Hold shell and cable stationary while rotating nut.

Description	Volts	Use cable	Reference	Part number
Coaxial – SHV-B Connector	7500	RG159B/U	CON-SHV-B	**9922005**

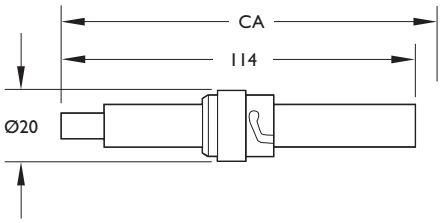
All dimensions are nominal in millimetres unless specified

Connectors and cables

Coaxial – SHV-10 and SHV-20

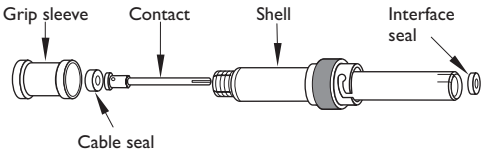
Air service to 85° C

CON-SHV-10



CON-SHV-20

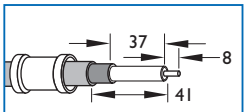
Parts nomenclature



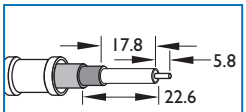
Description

Safe high voltage (SHV) 10 and 20kV connectors feature special high voltage interfaces, and are ideally suited for pulse applications. SHV high voltage connectors are designed for use where the normal operating voltage of standard coaxial connectors is inadequate. Note that SHV-10 and SHV-20 connectors are fitted with a Caburn-MDC BeCu contact to mate with our ceramic to metal feedthroughs.

Wiring instructions

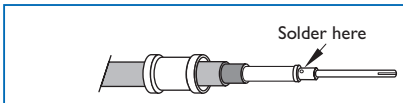


Step 1 **CON-SHV-10**



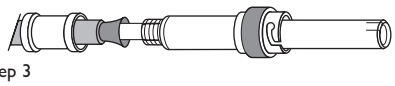
Step 1 **CON-SHV-20**

Step 1 Slide grip sleeve over cable jacket. Cut and strip cable jacket, braided shield and dielectric to dimensions shown above. Wet exposed conductor using a non acid core 60 – 40 tin lead solder. Do not overheat.



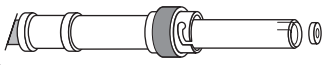
Step 2

Step 2 Slide cable seal and contact over conductor. Push contact against cable seal and maintain slight pressure while soldering contact in place. Do not overheat.



Step 3

Step 3 Flare out cable braid as shown, do not fray. Slide cable assembly into shell, do not pinch or otherwise damage cable seal. Guide braid over splined collar on shell until contact shoulder butts against shell insulator.



Step 4

Step 4 Slide grip sleeve forward over braid until it bottoms out on shell. Crimp in place as shown using a crimping tool. Braid should not extend beyond grip sleeve. Finally, slide interface seal into shell until it bottoms out evenly around contact.

Description	Connector type	Volts	Use cable	Reference	Part number
Coaxial – SHV-10 Connector		10000	RG58, RG58A or RG58C/U	CON-SHV-10	**9922010**
Coaxial – SHV-20 Connector	Reynolds	20000	RG213/U	CON-SHV-20-RET	**9922011**
Coaxial – SHV-20 Connector	Kings	20000	RG213/U	CON-SHV-20	**9922012**

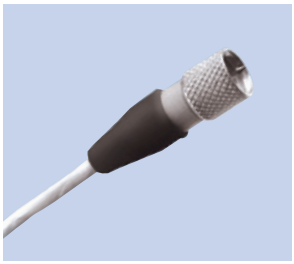
All dimensions are nominal in millimetres unless specified

Connectors and cables

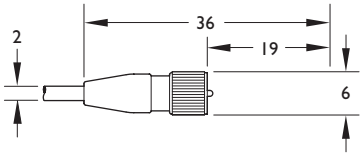
Microdot®

Air service to 125° C

CON-MDOT



CA
Connector attached measures the distance between the flange face of the feedthrough and the end of the attached connector.



Description

Microdot® coaxial connectors are designed to accept 50□ miniature coaxial cables. This is a screw type connector which offers the dependability of a threaded coupling. Caburn-MDC offers these Microdot® connectors pre-assembled with 3 metres of RG178B/U coaxial cable.

Description	Volts	Reference	Part number
Microdot® coaxial connector complete with 3m long cable	500	CON-MDOT	**9922008**

All dimensions are nominal in millimetres unless specified

Connectors and cables

Thermocouple – circular MS style

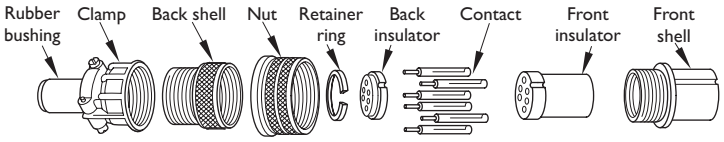
Wiring instruction for thermocouple MS circular connectors

Description

Although these connectors do not carry the MS prefix, they are of the MS type. Other than the alumina ceramic dielectric, these connectors meet standard specifications for MIL-C-5015 connectors. They are solid shell, straight plug threaded connectors with polarizing keyways. The female socket contacts are matched to E, J or K-type thermocouple materials suitable for service in air or vacuum and bakeable to 350°C. The metal shell components are nickel plated aluminium with low vapour pressure characteristics, unlike standard MS circular connectors which are cadmium plated and not suitable for UHV. Due to polarity reversal, air-side connectors cannot be used on the vacuum-side receptacle of a double ended feedthrough. Connectors are sold separately and specifically for air or vacuum service with unique part numbers for each.

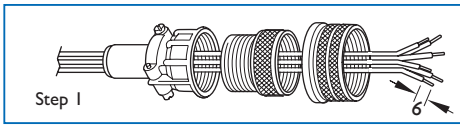
[1] Note that assembly instructions for the 2, 3, 5 and 10 pair thermocouple plugs are identical

Parts nomenclature

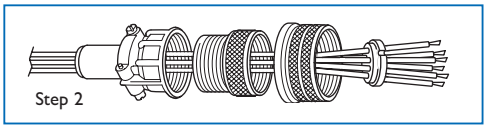


Air service to 165°C[1]

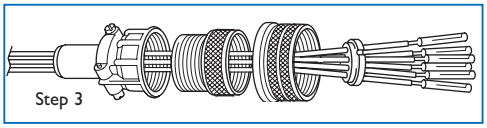
Wiring Instructions



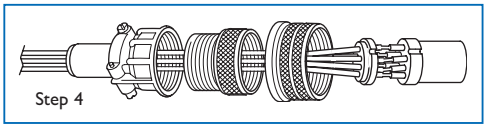
Step 1 Slide the cable clamp, rubber bushing, back shell and nut (in that order) over cable, then strip each conductor 6mm as detailed.



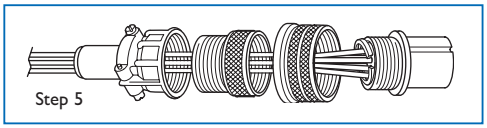
Step 2 Remove retainer ring from front shell and disassemble by sliding insulators and contacts. Note that the insulator consists of front and back pieces. Insert TC wires through the appropriate holes in back insulator before crimping contacts.



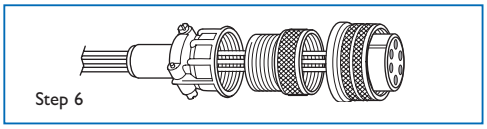
Step 3 Slide TC contacts on to corresponding TC wire and crimp in place. Note that TC contacts must be crimped to TC wires, never soldered.



Step 4 Insert crimped TC contacts into appropriate holes in front insulator. Note alignment slots on insulators.



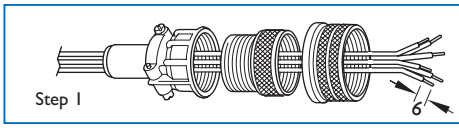
Step 5 Slide the front and back insulators together and insert them into the front shell. Secure them in place with the retainer ring.



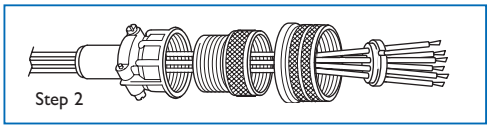
Step 6 Slide the nut over the front shell, then thread the back shell on to the front shell and tighten. Slide the rubber bushing inside the clamp. Thread the clamp on to the back shell and tighten. Moderately tighten clamp screws to provide adequate strain relief to wire and contacts.

Air and vacuum service to 165°C[1]

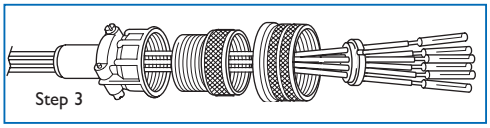
Wiring Instructions



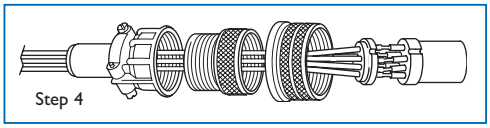
Step 1 Slide the cable clamp, back shell and nut (in that order) over cable, then strip each conductor 6mm as detailed.



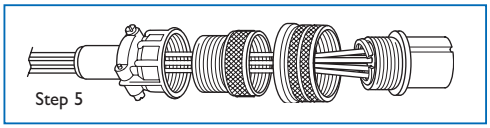
Step 2 Remove retainer ring from front shell and disassemble by sliding insulators and contacts. Note that the insulator consists of front and back pieces. Insert TC wires through the appropriate holes in back insulator before crimping contacts.



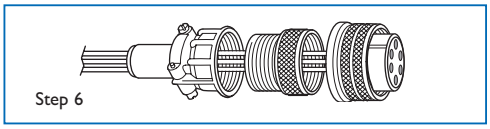
Step 3 Slide TC contacts on to corresponding TC wire and crimp in place. Note that TC contacts must be crimped to TC wires, never soldered.



Step 4 Insert crimped TC contacts into appropriate holes in front insulator. Note alignment slots on insulators.



Step 5 Slide the front and back insulators together and insert them into the front shell. Secure them in place with the retainer ring.



Step 6 Slide the nut over the front shell, then thread the back shell on to the front shell and tighten. Thread the clamp on to the back shell and tighten. Moderately tighten clamp screws to provide adequate strain relief to wire and contacts.

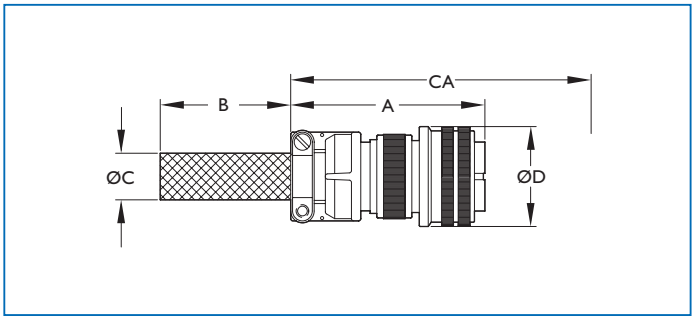
All dimensions are nominal in millimetres unless specified

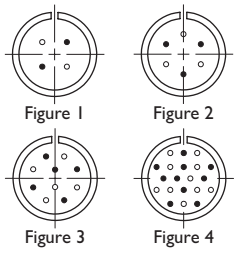
Connectors and cables

Thermocouple – circular MS style

TC MS Circular connectors¡ 2 to 10 pairs¡ air service to 125˚C

CON-MSE5





○ Indicates negative ¡ polarity
● Indicates positive + polarity

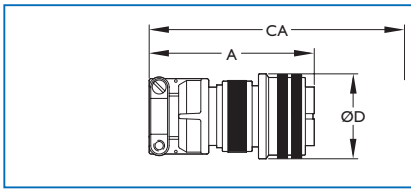
Description	TC type	No. of pairs	Figure	A	B	C	D	Reference	Part number
Circular MS air connector	E	2	1	66	43	14	34	CON-MSE2	9923004
Circular MS air connector	K	2	1	66	43	14	34	CON-MSK2	9923006
Circular MS air connector	E	3	2	66	43	14	34	CON-MSE3	9923007
Circular MS air connector	K	3	2	66	43	14	34	CON-MSK3	9923009
Circular MS air connector	E	5	3	66	43	14	34	CON-MSE5	9923010
Circular MS air connector	K	5	3	66	43	14	34	CON-MSK5	9923012
Circular MS air connector	E	10	4	74	36	19	50	CON-MSE10	9923020
Circular MS air connector	K	10	4	74	36	19	50	CON-MSK10	9923022

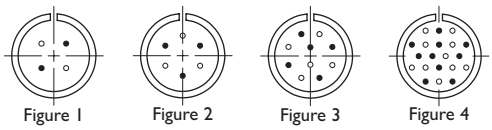
TC MS Circular connectors¡ 2 to 10 pairs¡ air service to 350˚C

Description	TC type	No. of pairs	Figure	A	B	C	D	Reference	Part number
Circular MS air connector	E	2	1	2.60	–	0.56	1.35	CON-MSE2-350	9923036
Circular MS air connector	J	2	1	2.60	–	0.56	1.35	CON-MSJ2-350	9923037
Circular MS air connector	K	2	1	2.60	–	0.56	1.35	CON-MSK2-350	9923038
Circular MS air connector	R	3	2	2.60	–	0.56	1.35	CON-MSR3-350	9923039
Circular MS air connector	J	3	2	2.60	–	0.56	1.35	CON-MSJ3-350	9923040
Circular MS air connector	K	3	2	2.60	–	0.56	1.35	CON-MSK3-350	9923041
Circular MS air connector	E	5	3	2.60	–	0.56	1.35	CON-MSE5-350	9923042
Circular MS air connector	J	5	3	2.60	–	0.56	1.35	CON-MSJ5-350	9923043
Circular MS air connector	K	5	3	2.60	–	0.56	1.35	CON-MSK5-350	9923044
Circular MS air connector	E	10	4	2.90	–	0.75	1.97	CON-MSE10-350	9923045
Circular MS air connector	J	10	4	2.90	–	0.75	1.97	CON-MSJ10-350	9923046
Circular MS air connector	K	10	4	2.90	–	0.75	1.97	CON-MSK10-350	9923047

TC MS Circular connectors¡ 2 to 10 pairs¡ vacuum service to 350˚C

CON-IVE5





○ Indicates negative ¡ polarity
● Indicates positive + polarity

Description	TC type	No. of pairs	Figure	A	D	Reference	Part number
Circular MS vacuum connector	E	2	1	66	34	CON-IVE2	9923024
Circular MS vacuum connector	K	2	1	66	34	CON-IVK2	9923026
Circular MS vacuum connector	E	3	2	66	34	CON-IVE3	9923027
Circular MS vacuum connector	K	3	2	66	34	CON-IVK3	9923029
Circular MS vacuum connector	E	5	3	66	34	CON-IVE5	9923030
Circular MS vacuum connector	K	5	3	66	34	CON-IVK5	9923032
Circular MS vacuum connector	E	10	4	74	50	CON-IVE10	9923033
Circular MS vacuum connector	K	10	4	74	50	CON-IVK10	9923035

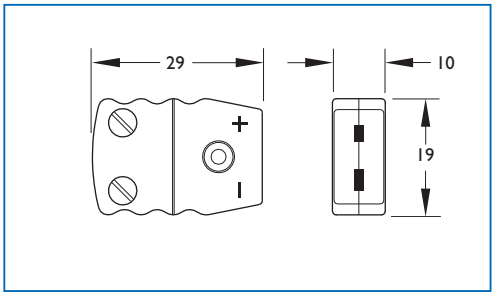
All dimensions are nominal in millimetres unless specified

Connectors and cables

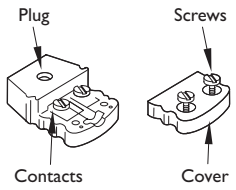
Thermocouple – miniature and high voltage

Miniature single pair ¡ air service to 125˚C

CON-TCC



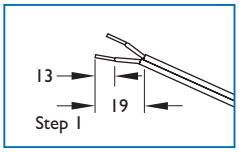
Parts nomenclature



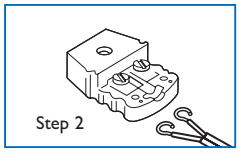
Description

Miniature thermocouple connectors are recommended for use with fine gauge thermocouple wires where standard size connectors are not suitable. These connectors are polarized female socket type connections. Polarization is achieved by the use of two socket sizes, eliminating the possibility of cross polarity.

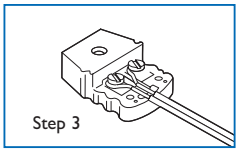
Wiring Instructions



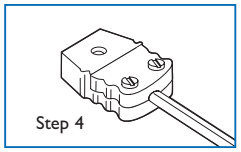
Step 1 Cut and strip thermocouple wire jacket and dielectric as shown.



Step 2 Loop conductor in a clockwise direction as shown to fit around the diameter of the contact screw. Loosen contact screws approximately 3 turns to allow conductor insertion under screw heads.



Step 3 Hook the conductors under screw heads and tighten moderately.



Step 4 Place cover back on plug and tighten moderately.

TC Type	Reference	Part number
C	CON-TCC	**9923000**
E	CON-TCE	**9923001**
J	CON-TCJ	**9923002**
K	CON-TCK	**9923003**
N	CON-TCN	**9923023**

High voltage connections

Silicone high voltage¡ 5kV and 20kV¡ air service¡ 55˚C to 125˚C

PB5 and PB20

Description

High-voltage connectors are silicone rubber insulated with moulded and prewired high voltage silicone cabling.

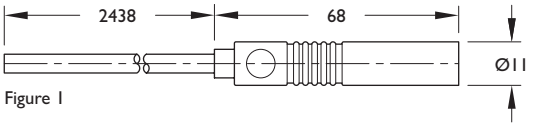


Figure 1

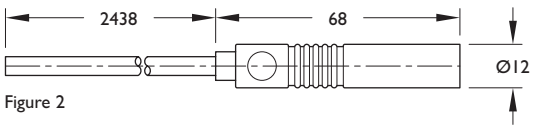


Figure 2

Features

- Supplied with standard 2m cables
- Protects operator from exposure to high voltage
- Custom cable lengths available on request

Description	Conductor	Figure	Voltage	Amps	Quantity per package	Reference	Part number
Powerglove 5kV DC	2.4	1	5kV DC	25	1	PB5	**9924016**
Powerglove 20kV DC	2.4	2	20kV DC	25	1	PB20	**9924033**

All dimensions are nominal in millimetres unless specified

Connectors and cables

In-vacuum wire and screw connectors

Crimp connectors

PPINS20P

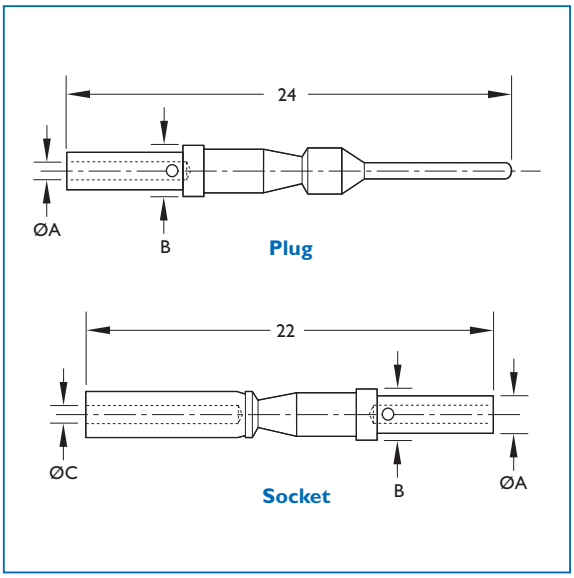
PPINS20S

Description

Four or eight gold-plated pins. Crimp to wire or feedthrough conductor for in-vacuum connection.

Features

- Gold plated
- Maximum temperature 200°C vacuum



Description	Contact size	Diameter A minimum	Diameter B minimum	Maximum diameter C	Quantity per pack	Reference	Part number
Socket	20	1.2	2.6	1.1	25	PPINS20S	**1512250**
Socket	16	1.7	3.8	1.7	25	PPINS16S	**1512251**
Socket	12	2.5	5.1	2.5	10	PPINS12S	**1512252**
Plug	20	1.2	2.6	1.0	25	PPINS20P	**1512253**
Plug	16	1.7	3.8	1.6	25	PPINS16P	**1512254**
Plug	12	2.5	5.1	2.4	10	PPINS12P	**1512255**

All dimensions are nominal in millimetres unless specified

TC ¡ Screws and nut sets ¡ 450˚C air and vacuum services

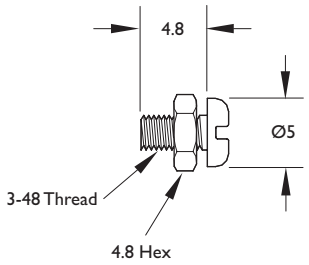
TCS

Description

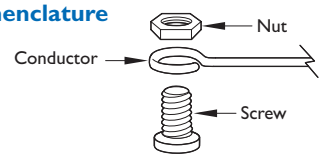
Stainless steel, slotted pan head.

Features

- Supplied complete with hex nut



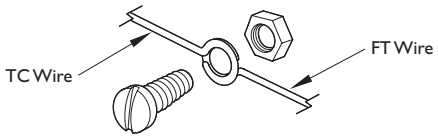
Parts nomenclature



Wiring instructions

Step 1

Step 1 Loosen pan head screw and nut located on conductor ends. Loop thermocouple wires in a clockwise direction to fit around the 2.4mm diameter screws supplied.



Step 2

Step 2 Butt TC wires and feedthrough wires together as shown. Be sure to match for proper polarity – insert screw through looped wires and fasten with nut and tighten adequately.

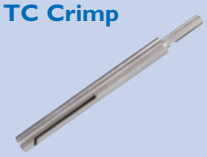
Description	Material	Use cable	Reference	Part number
TC Screw and nut set	Stainless steel	10	TCS	**9923019**

All dimensions are nominal in millimetres unless specified

Connectors and cables

In-vacuum connectors

Connector to conductor diameter reference table

Connector types	Feedthrough conductor sizes mm / inches									
	0.81 .032	1.27 .050	1.42 .056	2.35 .092	2.39 .094	3.96 .156	4.06 .160	6.35 .250	9.65 .380	19.05 .750
Power crimp 	9924000									
TC Crimp 			9920013 9920014 9920015 9920016 9920017 9920018							
Power push-on 		9924001	9924002	9924003	9924003			9924010		
Power in-line 			9924004	9924006	9924006	9924007	9924007	9924008		
Powerglove® Air-side only 					9924016 9924024					
In-line clamp 						991536	991536	991536		
Right-angle clamp 						991537	991537	991537		
Caburn-MDC custom connectors	Contact technical sales									

All dimensions are nominal in millimetres unless specified

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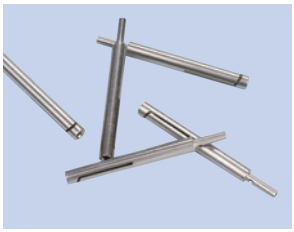
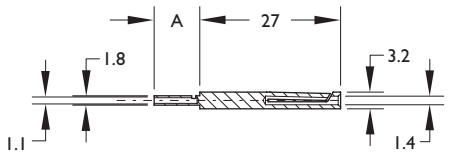
TC ¡ Crimp push ¡ 350˚C air and vacuum service

TCP-CH

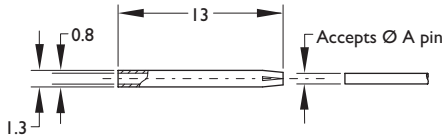




Material	Diameter A	Quantity per pack	Reference	Part number
Chromel®	7	5	TCP-CH	**9923013**
Alumel®	7	5	TCP-AL	**9923014**
Iron	8	5	TCP-FE	**9923015**
Constantan J	8	5	TCP-J	**9923016**
Constantan E & T	8	5	TCP-ET	**9923017**
Nickel-200	8	5	TCP-NI	**9923018**

Power crimp ¡ 150˚C air ¡ 200˚C vacuum service

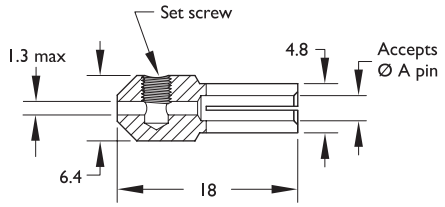
PC-032



Material	Diameter A	Quantity per pack	Reference	Part number
BeCu	0.81	10	PC-032	**9924000**

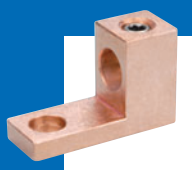
Power push-on ¡ 150˚C air ¡ 200˚C vacuum service complete with set screw

PPO-094



Material	Diameter A	Quantity per pack	Reference	Part number
BeCu	1.3	10	PPO-050	**9924001**
BeCu	1.5	10	PPO-060	**9924002**
BeCu	2.4	10	PPO-094	**9924003**
BeCu	6.4	2	PPO-250	**9924010**

All dimensions are nominal in millimetres unless specified

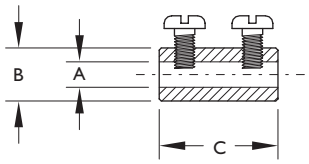


Connectors and cables

In-vacuum connectors

Power in-line ¡ 150˚C air ¡ 400˚C vacuum service complete with pan head screws

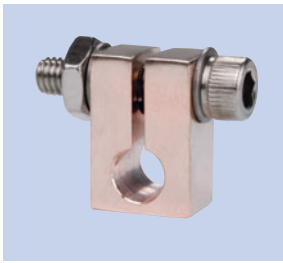
PIL-260

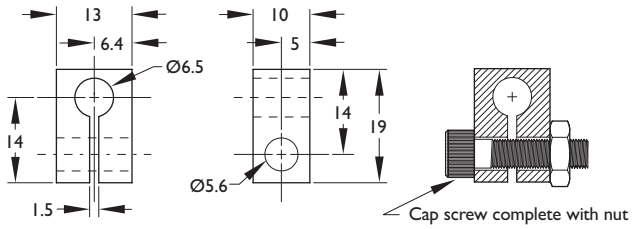


Material	Diameter A	Diameter B	C	Quantity per pack	Reference	Part number
BeCu	1.5	5	13	10	PIL-059	**9924004**
BeCu	1.8	5	13	10	PIL-072	**9924005**
BeCu	3.0	6	14	10	PIL-120	**9924006**
BeCu	3.4	6	16	10	PIL-134	**9924007**
BeCu	6.6	13	25	10	PIL-260	**9924008**

In-line clamp connectors complete with cap head screw

IPLC

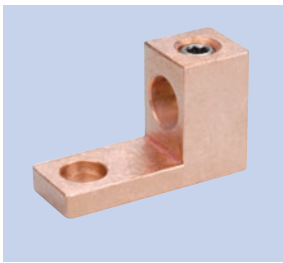


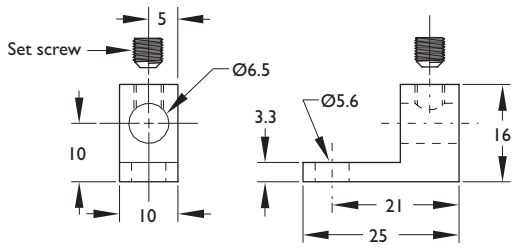


Material	Quantity per pack	Reference	Part number
Copper	1	ILPC	**991536**

Right-angle connectors complete with set screw

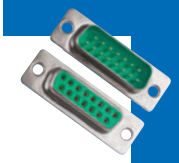
RAPC





Material	Quantity per pack	Reference	Part number
Copper	1	RAPC	**991537**

All dimensions are nominal in millimetres unless specified



UHV Connectors and contacts

D25-BCON2M Male with 1510101 contacts

D50-BCON2F

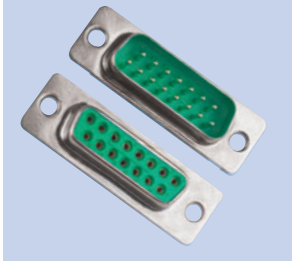
No. of wires	Connector type	Connector width	Connector depth	Use height	Contact	Reference	Part number
UHV Vacuum connectors							
9	Male	33	19	13	1510101	D9-BCON2M	**1510020**
15	Male	42	19	13	1510101	D15-BCON2M	**1510021**
25	Male	56	19	13	1510101	D25-BCON2M	**1510022**
50	Male	67	19	13	1510101	D50-BCON2M	**1510023**
9	Female	33	19	13	1510100	D9-BCON2F	**1510010**
15	Female	42	19	13	1510100	D15-BCON2F	**1510011**
25	Female	56	19	13	1510100	D25-BCON2F	**1510012**
50	Female	67	19	13	1510100	D50-BCON2F	**1510013**
Contacts							
1 pack male contacts 25 pieces per package						DPINMC	**1510101**
1 pack female contacts 25 pieces per package						DPINFC	**1510100**

Connectors do not include contacts which must be purchased separately

These connectors and contacts will mate with 1mm pin diameters

HV Connectors and contacts

D15-BCON1M with 1510104 contacts



No. of wires	Connector type	Connector width	Connector depth	Use height	Contact	Reference	Part number
HV Vacuum connectors							
9	Male	33	19	13	1510101	D9-BCON1M	**1510006**
15	Male	42	19	13	1510101	D15-BCON1M	**1510007**
25	Male	56	19	13	1510101	D25-BCON1M	**1510008**
50	Male	67	19	13	1510101	D50-BCON1M	**1510009**
9	Female	33	19	13	1510100	D9-BCON1F	**1510000**
15	Female	42	19	13	1510100	D15-BCON1F	**1510001**
25	Female	56	19	13	1510100	D25-BCON1F	**1510002**
50	Female	67	19	13	1510100	D50-BCON1F	**1510003**
Contacts							
1 pack male contacts 25 pieces per package						DPIN-MPOS	**1510114**
1 pack female contacts 25 pieces per package						DPIN-FPOS	**1510113**

Vacuum connectors do not include contacts which must be purchased separately

These connectors and contacts will mate with 1mm pin diameters

Air-side connectors are fitted with solder-cup contacts

Air side connector

No. of wires	Connector type	Connector width	Connector depth	Use height	Contact	Reference	Part number
Air service connectors							
9	Female	33	19	13	Included	D9-AC	**1510990**
15	Female	42	19	13	Included	D15-AC	**1510991**
25	Female	56	19	13	Included	D25-AC	**1510992**
50	Female	67	19	13	Included	D50-AC	**1510993**

All dimensions are nominal in millimetres unless specified

Connectors and cables

Subminiature-D coaxial / subminiature-C connectors

Air-service adaptor Female-BNC / Female-SMA

DC-BA588

Product type	First end	Second end	Reference	Part number
Adaptor	Female-BNC	Female-SMA	DC-BA588	**1512728**

Air-service adaptor Male-BNC / Female-SMA

DC-BA29

Product type	First end	Second end	Reference	Part number
Adaptor	Male-BNC	Male-SMA	DC-BA29	**1512730**

Air-service adaptor Female-BNC / Female-BNC

DA-BA80

Product type	First end	Second end	Reference	Part number
Adaptor	Male-BNC	Female-BNC	DC-BA80	**1512731**

HV Connectors and contacts

UHV Female C9-VCS and Male C9-VCP

No. of pins	Service type	Connector type	Connector OD	Connector length	Use contact	Reference	Part number
Connectors							
9	UHV	Male	16	13	1510103	C9-VCP	**1512606**
9	UHV	Female	16	19	1510102	C9-VCS	**1512603**
9	Air	Female	16	19	1510102	C9-ACS	**1512602**
Contacts							
1 pack UHV / Air male contacts 10 pieces per package						DPINMC-10	**1510103**
1 pack UHV / Air female contacts 10 pieces per package						DPINFC-10	**1510102**

Connectors do not include contacts which must be purchased separately

These connectors and contacts will mate with 1mm pin diameters

Vacuum-side connectors are made of PEEK® – air-side connectors are made of Delrin®

All dimensions are nominal in millimetres unless specified

Connectors and cables

Subminiature-D coaxial / subminiature-C connectors

Caburn-MDC offers a wide range of coaxial cables, wires, rods and insulators to provide the necessary connections into the vacuum environment.

We offer many different solutions, from vacuum-ready coaxial cables to specialized wires, such as Kapton® wire, for customized in-vacuum applications.

Coaxial cables

All coaxial cables are constructed with vacuum grade materials and components, including stainless steel braided shielding, high purity alumina ceramic insulation, beryllium copper contacts and aluminium terminations. Cable assemblies are suitable for high temperatures and rated for high and ultra-high vacuum service. Please note that when connecting cables to feedthroughs, the effective voltage, current and temperature ratings for the set are reduced to that of its lower rated component.

Termination-A 200°C

Type-A terminations were designed as a convenient means of connecting to the vacuum-side of Caburn-MDC coaxial flange-mounted BNC and MHV coaxial products which have a 2.39mm conductor pin diameter. Termination-A vacuum ready cables are specifically designed to be used with Caburn-MDC between series feedthroughs as detailed in this catalogue.

Termination-B 200°C

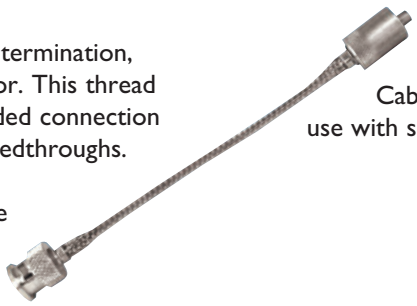
Type-B terminations are basic cable terminations fitted with push-on contacts for 2.39mm conductor pin diameters, ideal for quick connect applications where non-continuous coaxial shielding is acceptable. Because of spring retention design, these units are only rated to 200°C.

Termination-C 400°C

Type-C terminations are also for non-continuous coaxially shielded applications, but have a temperature rating of 400°C, made possible by its mechanical, set screw clamping design.

Termination-D 200°C

Type-D termination is identical to Type-A termination, with the exception of a male thread adaptor. This thread adaptor enables a continuous coaxial shielded connection to floating shield BNC, MHV and SHV-5 feedthroughs. The threaded adaptor is attached to the feedthrough by means of a set screw in the adaptor base.



Termination BNC and MHV 400°C

Type BNC and MHV terminations were designed as high temperature versions of the traditional bayonet naval connection. They provide a means of connecting to Caburn-MDC double ended BNC and MHV coaxial feedthroughs or, for that matter, any in-vacuum component fitted with a female BNC and MHV mating connection. Please note that BNC and MHV should not be cross-mated.

Microdot® 400°C

Microdot® coaxial terminations are designed for use with Caburn-MDC between series BNC-Microdot® crystal sensor feedthroughs as detailed in this catalogue. These cables must be shielded when used in vacuum coating applications. Failure to do so will lead to electrical degradation and eventual failure.

Wire and rod

Caburn offers a wide variety of bare wire and rod materials, all of which are suitable for high and ultra-high vacuum applications.

Special purpose materials such as stainless steel braided shielding and Glidcop® copper alloy wire, insulated with fish spine ceramic beads are ideal for the fabrication of vacuum ready coaxial cables and are particularly recommended for use in flexible coaxial cables.

Insulator materials

Caburn-MDC's standard ceramic Insulator components are fabricated using high purity alumina, 95% Al203, which is ideal for high and ultra-high vacuum service.

Alumina is a multi-crystalline form of sapphire and its properties include high compressive and mechanical strength, high wear and heat resistance, good radiation resistance and high electrical resistivity. It also has zero porosity and is hence impervious to all gases. All of these properties make alumina an excellent engineering material suitable for some of the most extreme and demanding applications.

Tools

Caburn offers a variety of tools suitable for use with some of the products in this section.

All dimensions are nominal in millimetres unless specified

Connectors and cables

Vacuum ready coaxial cables

General specifications for assemblies

Type	Termination type	Cable type	Application	Voltage	Current	Service temperature	Materials
Vacuum-ready coaxial cable	A, B, C, D BNC MHV Microdot®	3.18mm (¼")	Feedthroughs	To 3kV-DC	To 15A	To 400°C	304-Stainless steel braid Aluminium hardware Beryllium-copper contacts Alumina ceramic Copper conductor
Termination kits	BNC MHV	Coaxial	Feedthroughs	–	–	200°C 400°C	–
Kapton® cable assemblies	Sub-D Sub-C Floating shield Grounded shield User-end	Instrument Coaxial	In-vacuum Air	–	–	–	–

General specifications for wire and rod materials

Type	Material	Application	Size	Voltage	Current	Service temperature
Shielding and braid	Stainless steel OFHC	–	3.2 to 6.4 6.4	–	–	–
Wire	OFHC-copper Nickel 304-Stainless steel	Electrical feedthroughs	0.8 to 2.4	–	To 30A	450°C
Rod	OFHC-copper Nickel 304-Stainless steel	High current feedthroughs	6.4	–	To 150A	450°C
In-vacuum cables	Kapton®	Feedthroughs	Various	–	–	–
Thermocouple wire and rod	Kapton® Types C, E, J, K, N, R, S & T	Thermocouples	3.2 to 6.4	–	–	350°C
Fibre optics	-	–	–	–	–	200°C

General specifications for insulator materials

Type	Material	Alumina content	Application	Conductor size	Number of pins	Voltage	Service temperature
Standoffs	Steatite	–	Miscellaneous	6-32" 8-32" 10-32" ¼-20"	–	To 40kV-DC	To 450°C
Ceramic beads	Alumina	95%	Vacuum wire insulation	1.1 to 3.3	1	–	To 450°C
Spacers	Alumina	95%	Multi-pin	1.0 to 1.8 feedthroughs	4 to 35	–	To 450°C
Tools	Various						

All dimensions are nominal in millimetres unless specified

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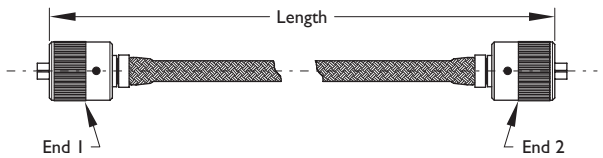
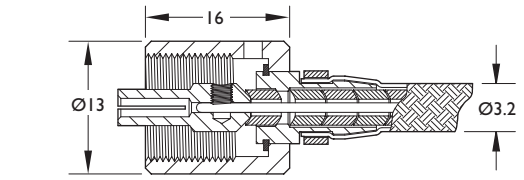
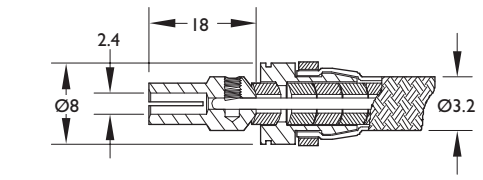
3.2 1/8" vacuum ready cable assemblies

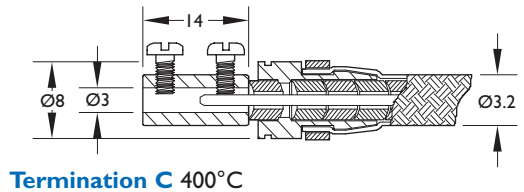




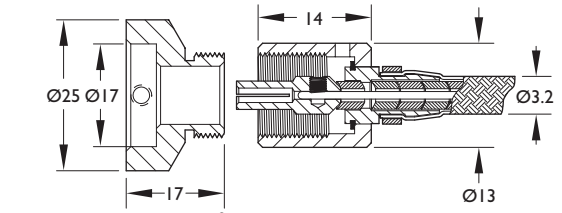
Termination A 200°C



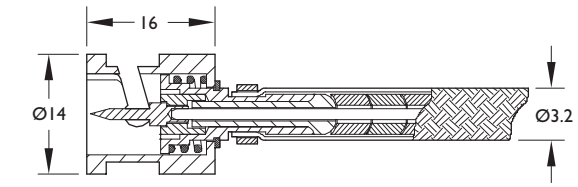
Termination B 200°C



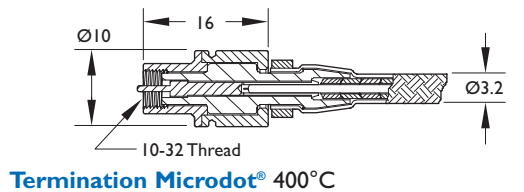
Termination C 400°C



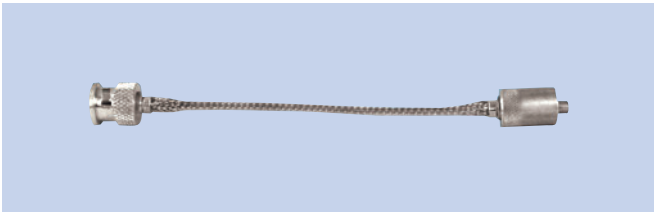
Termination D 200°C



Termination BNC and MHV 400°C



Termination Microdot® 400°C



Features

- Vacuum ready
- UHV-Compatible
- Bakeable as shown

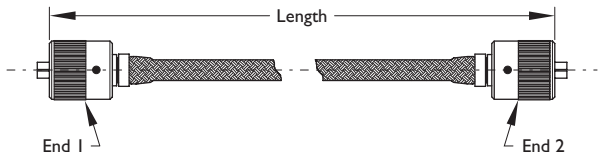
Length	Termination End 1	Termination End 2	Reference	Part number
305	A	A	VRC8-AA-12	9931101
305	A	B	VRC8-AB-12	9931102
305	A	C	VRC8-AC-12	9931103
305	A	D	VRC8-AD-12	9931104
305	A	BNC	VRC8-ABNC-12	9931105
305	A	MHV	VRC8-AMHV-12	9931112
305	B	B	VRC8-BB-12	9931106
305	B	C	VRC8-BC-12	9931107
305	B	D	VRC8-BD-12	9931108
305	C	C	VRC8-CC-12	9931109
305	C	D	VRC8-CD-12	9931110
305	D	D	VRC8-DD-12	9931111
305	Microdot®	Microdot®	VRC8-MIMI-12	9931113
610	A	A	VRC8-AA-24	9931201
610	A	B	VRC8-AB-24	9931202
610	A	C	VRC8-AC-24	9931203
610	A	D	VRC8-AD-24	9931204
610	A	BNC	VRC8-ABNC-24	9931205
610	A	MHV	VRC8-AMHV-24	9931212
610	B	B	VRC8-BB-24	9931206
610	B	C	VRC8-BC-24	9931207
610	B	D	VRC8-BD-24	9931208
610	C	C	VRC8-CC-24	9931209
610	C	D	VRC8-CD-24	9931210
610	D	D	VRC8-DD-24	9931211
610	Microdot®	Microdot®	VRC8-MIMI-24	9931213
910	A	A	VRC8-AA-36	9931301
910	A	B	VRC8-AB-36	9931302
910	A	C	VRC8-AC-36	9931303
910	A	D	VRC8-AD-36	9931304
910	A	BNC	VRC8-ABNC-36	9931305
910	A	MHV	VRC8-AMHV-36	9931312
910	B	B	VRC8-BB-36	9931306
910	B	C	VRC8-BC-36	9931307
910	B	D	VRC8-BD-36	9931308
910	C	C	VRC8-CC-36	9931309
910	C	D	VRC8-CD-36	9931310
910	D	D	VRC8-DD-36	9931313
910	Microdot®	Microdot®	VRC8-MIMI-36	9931303

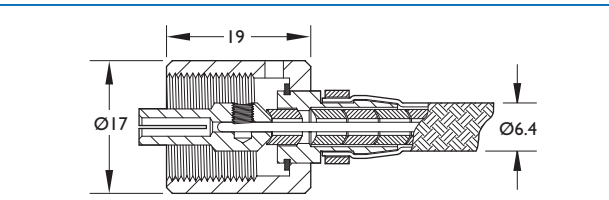
All dimensions are nominal in millimetres unless specified

Connectors and cables

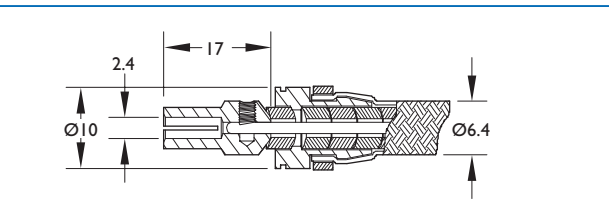
Vacuum ready coaxial cables

6.4 ¼" vacuum ready cable assemblies

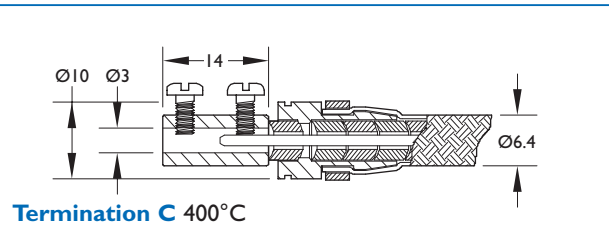




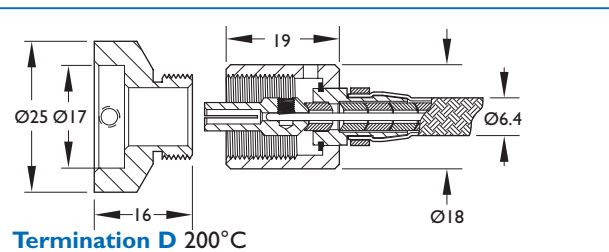
Termination A 200°C



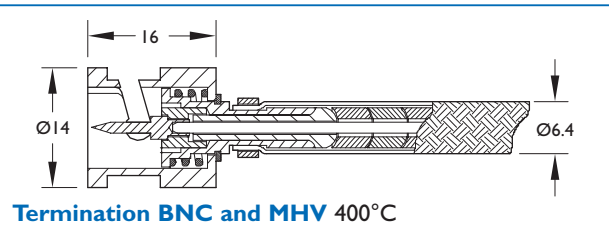
Termination B 200°C



Termination C 400°C



Termination D 200°C



Termination BNC and MHV 400°C

Features

- Vacuum ready
- UHV-Compatible
- Bakeable as shown

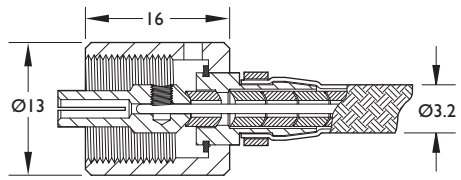
Length	Termination End 1	End 2	Reference	Part number
305	A	A	VRC4-AA-12	9932101
305	A	B	VRC4-AB-12	9932102
305	A	C	VRC4-AC-12	9932103
305	A	D	VRC4-AD-12	9932104
305	A	BNC	VRC4-ABNC-12	9932111
305	A	MHV	VRC4-AMHV-12	9932112
305	B	B	VRC4-BB-12	9932105
305	B	C	VRC4-BC-12	9932106
305	B	D	VRC4-BD-12	9932107
305	C	C	VRC4-CC-12	9932108
305	C	D	VRC4-CD-12	9932109
305	D	D	VRC4-DD-12	9932110
305	BNC	BNC	VRC4-BNBN-12	9932113
305	MHV	MHV	VRC4-MHMH-12	9932114
610	A	A	VRC4-AA-24	9932201
610	A	B	VRC4-AB-24	9932202
610	A	C	VRC4-AC-24	9932203
610	A	D	VRC-AD-24	9932204
610	A	BNC	VRC4-ABNC-24	9932211
610	A	MHV	VRC4-AMHV-24	9932212
610	B	B	VRC4-BB-24	9932205
610	B	C	VRC4-BC-24	9932206
610	B	D	VRC4-BD-24	9932207
610	C	C	VRC4-CC-24	9932208
610	C	D	VRC4-CD-24	9932209
610	D	D	VRC4-DD-24	9932210
610	BNC	BNC	VRC4-BNBN-24	9932213
610	MHV	MHV	VRC4-MHMH-24	9932214
910	A	A	VRC4-AA-36	9932301
910	A	B	VRC4-AB-36	9932302
910	A	C	VRC4-AC-36	9932303
910	A	D	VRC4-AD-36	9932304
910	A	BNC	VRC4-ABNC-36	9932311
910	A	MHV	VRC4-AMHV-36	9932312
910	B	B	VRC4-BB-36	9932305
910	B	C	VRC4-BC-36	9932306
910	B	D	VRC4-BD-36	9932307
910	C	C	VRC4-CC-36	9932308
910	C	D	VRC4-CD-36	9932309
910	D	D	VRC4-DD-36	9932310
910	BNC	BNC	VRC4-BNBN-36	9932313
910	MHV	MHV	VRC4-MHMH-36	9932314

All dimensions are nominal in millimetres unless specified

Connectors and cables

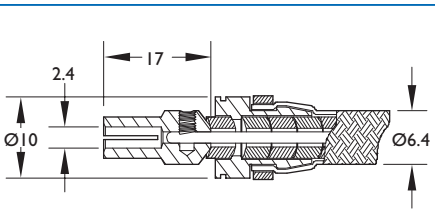
In-vacuum cable termination kits

Type A 200°C



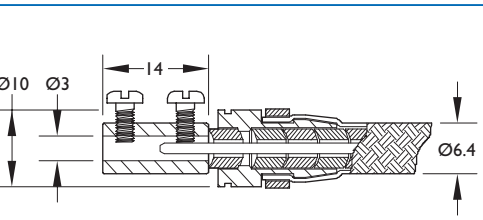
Reference	Part number
CXC-A8	9922100

Type B 200°C



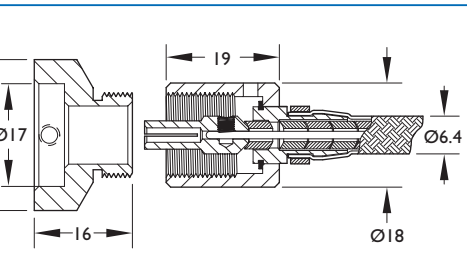
Reference	Part number
CXC-B8	9922110

Type C 200°C



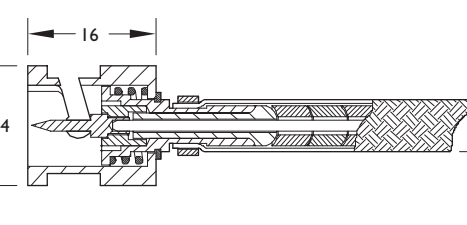
Reference	Part number
CXC-C8	9922120

Type D 200°C



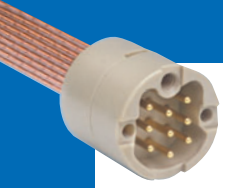
Reference	Part number
CXC-D8	9922130

BNC and MHV 400°C



Reference	Reference	Part number
BNC	CXC-BNC8	9922140
MHV	CXC-MHV8	9922150

All dimensions are nominal in millimetres unless specified

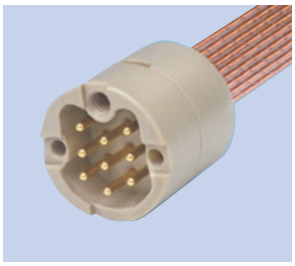


Connectors and cables

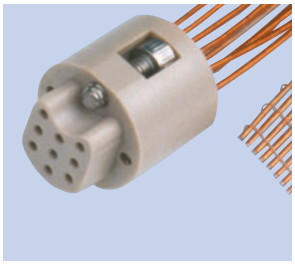
Subminiature-C cable assemblies

UHV Ribbon cable assemblies Kapton® insulated

C9R-V19P



C9R-V19S



No. of wires	Cable length	Connector type	Connector OD	Connector length	Wire dia.	Reference	Part number
Connector fitted[1]							
9	500	Male	16	13	1	C9R-V19P	**1512636**
9	1000	Male	16	13	1	C9R-V39P	**1512637**
9	500	Female	16	19	1	C9R-V19S	**1512638**
9	1000	Female	16	19	1	C9R-V39S	**1512639**
Contact fitted[2]							
9	500	Male	16	13	1	C9R-V19CP	**1512640**
9	1000	Male	16	13	1	C9R-V39CP	**1512641**
9	500	Female	16	19	1	C9R-V19CS	**1512642**
9	1000	Female	16	19	1	C9R-V39CS	**1512643**

[1] Each cable assembly is fitted with a PEEK® subminiature-C male or female connector
The female connector mates directly onto the vacuum-side of a nine-pin subminiature-C feedthrough

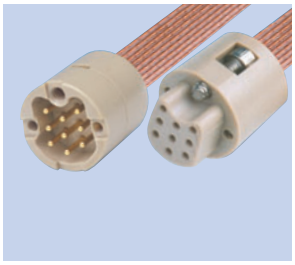
[2] **Caution!** These cable assemblies do not include the PEEK® connector and they will not allow subsequent connector installation
Wires must be threaded through connector back piece before crimping contacts

UHV connectors are made from PEEK® and wired with Kapton® insulated silver plated copper leads

All UHV cable assemblies are bakeable to 250°C

UHV Ribbon extension cables Kapton® insulated

C9-VCS and C9-VCP



Service type	Reference	Part number
In-vacuum extension cables[1]		
UHV Cable length 500	SMCAB-C9UHV-500	**1608021**
UHV Cable length 1000	SMCAB-C9UHV-1000	**1608023**

[1] Each cable is fitted with male and female nine-way subminiature-C connectors

Use with nine-pin subminiature-C UHV and HV feedthroughs

All UHV cable assemblies are bakeable to 250°C

All dimensions are nominal in millimetres unless specified

Connectors and cables

Subminiature-C cable assemblies

Air-service cable assemblies

C9-A48S

No. of wires	Cable length	Connector type	Connector OD	Connector length	Wire dia.	Reference	Part number
Connector fitted							
9	1200	Female	16	19	7 x 0.2	C9-A48S	**1512620**
9	2500	Female	16	19	7 x 0.2	C9-A96S	**1512621**

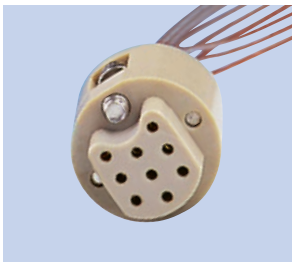
Each cable assembly is fitted with a Delrin® subminiature-C female connector

This connector mates directly onto the air-side of a nine-pin subminiature-C feedthrough

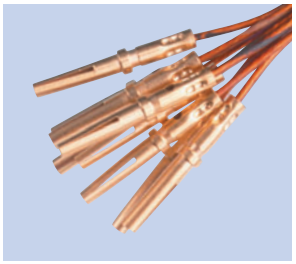
UHV Cable assemblies Kapton® insulated

C9C-V19P

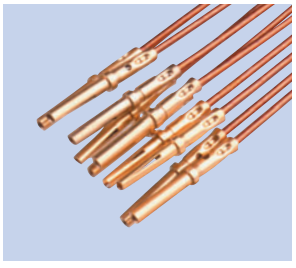
C9C-V19S



C9C-V19CS



UHV Leads



No. of wires	Cable length	Connector type	Connector OD	Connector length	Wire dia.	Reference	Part number
Connector fitted cable[1]							
9	500	Male	16	13	7 x 0.1	C9C-V19P	**1512623**
9	1000	Male	16	13	7 x 0.1	C9C-V39P	**1512624**
9	500	Female	16	19	7 x 0.1	C9C-V19S	**1512625**
9	1000	Female	16	19	7 x 0.1	C9C-V39S	**1512626**
Contact fitted cable[2]							
9	500	Male	–	–	7 x 0.1	C9C-V19CP	**1512627**
9	1000	Male	–	–	7 x 0.1	C9C-V39CP	**1512628**
9	500	Female	–	–	7 x 0.1	C9C-V19CS	**1512629**
9	1000	Female	–	–	7 x 0.1	C9C-V39CS	**1512630**

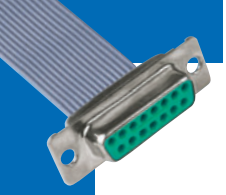
[1] Each cable assembly is fitted with a PEEK® subminiature-C male or female connector
The female connector mates directly onto the vacuum-side of a nine-pin subminiature-C feedthrough

[2] **Caution!** These cable assemblies do not include the PEEK® connector and they will not allow subsequent connector installation
Wires must be threaded through connector back piece before crimping contact.

All UHV cable assemblies are bakeable to 250°C

UHV connectors are made from PEEK® and wired with Kapton® insulated silver plated copper leads

All dimensions are nominal in millimetres unless specified

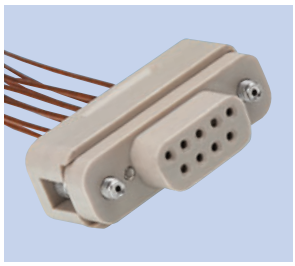


Connectors and cables

Subminiature-C cable assemblies

UHV Ribbon cable assemblies Kapton® insulated

KAP-R9-500FC



No. of wires	Cable length	Connector type	Connector OD	Connector length	Wire dia.	Reference	Part number
Female connector fitted							
9	500	33	19	13	1	KAP-R9-500FC	**1512350**
9	1000	33	19	13	1	KAP-R9-1000FC	**1512354**
15	500	42	19	13	1	KAP-R15-500FC	**1512351**
15	1000	42	19	13	1	KAP-R15-1000FC	**1512355**
25	500	56	19	13	1	KAP-R25-500FC	**1512352**
25	1000	56	19	13	1	KAP-R25-1000FC	**1512356**
50	500	67	19	13	1	KAP-R50-500FC	**1512357**
50	1000	67	19	13	1	KAP-R50-1000FC	**1512358**
Female contacts fitted[1]							
9	500	–	–	–	1	KAP-R9-500FP	**1512301**
9	1000	–	–	–	1	KAP-R9-1000FP	**1512310**
15	500	–	–	–	1	KAP-R15-500FP	**1512302**
15	1000	–	–	–	1	KAP-R15-1000FP	**1512311**
25	500	–	–	–	1	KAP-R25-500FP	**1512303**
25	1000	–	–	–	1	KAP-R25-1000FP	**1512312**

Cable assembly consists of single female connector with crimps wired to end of ribbon cable

Other end of ribbon cable is supplied with bare end (i.e. no connector or crimps)

Each wire is constructed of 7 each 0.13mm silver plated copper strands

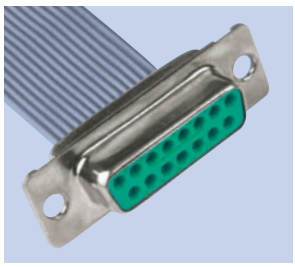
50 pin cable assemblies are constructed using two 25 pin ribbons

All UHV cable assemblies are bakeable to 260°C

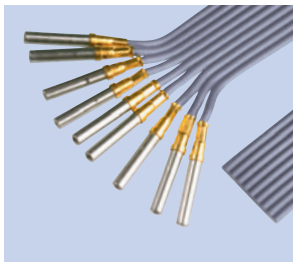
[1] **Caution!** These cable assemblies do not include the PEEK® connector and they will not allow subsequent connector installation Wires must be threaded through connector back piece before crimping contacts

HV PTFE Ribbon cable assemblies

D15-BCON1-500FC



D9-FPOS-500FP



No. of wires	Cable length	Connector type	Connector OD	Connector length	Wire dia.	Reference	Part number
Female connector fitted							
9	500	33	19	13	1	D9-BCON1-500FC	**1512660**
9	1000	33	19	13	1	D9-BCON1-1000FC	**1512661**
15	500	42	19	13	1	D15-BCON1-500FC	**1512662**
15	1000	42	19	13	1	D15-BCON1-1000FC	**1512663**
25	500	56	19	13	1	D25-BCON1-500FC	**1512664**
25	1000	56	19	13	1	D25-BCON1-1000FC	**1512665**
50	500	67	19	13	1	D50-BCON1-500FC	**1512666**
50	1000	67	19	13	1	D50-BCON1-1000FC	**1512667**
Female contacts fitted							
9	500	–	–	–	1	D9-FPOS-500FP	**1512668**
9	1000	–	–	–	1	D9-FPOS-1000FP	**1512669**
15	500	–	–	–	1	D15-FPOS-500FP	**1512670**
15	1000	–	–	–	1	D15-FPOS-1000FP	**1512671**
25	500	–	–	–	1	D25-FPOS-500FP	**1512672**
25	1000	–	–	–	1	D25-FPOS-1000FP	**1512673**

Cable assembly consists of single female connector with crimps wired to end of ribbon cable

Other end of ribbon cable is supplied with bare end (i.e. no connector or crimps)

Each wire is constructed of seven each 0.13mm silver plated copper strands

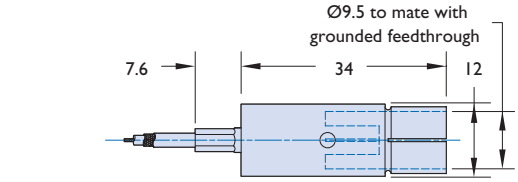
50 pin cable assemblies are constructed using two 25 pin ribbons

Maximum temperature rating 105°C

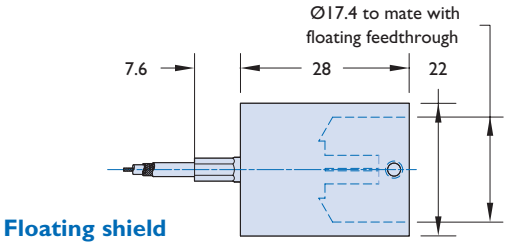
All dimensions are nominal in millimetres unless specified

UHV 50□ Coaxial cable / connector assemblies

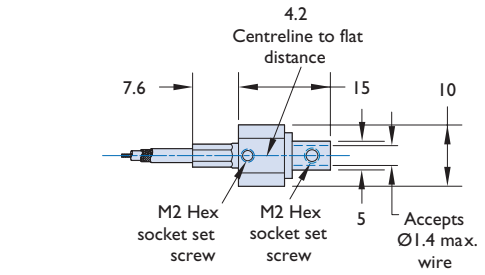
KAP50-GS-500 and KAP50-FS-500



Grounded shield



Floating shield



User-end

Accessory type	Termination type	Cable length	Reference	Part number
UHV Cable/connector assemblies	Grounded	500	KAP50-GS-500	**1512507**
UHV Cable/connector assemblies	Grounded	1000	KAP50-GS-1000	**1512508**
UHV Cable/connector assemblies	Floating	500	KAP50-FS-500	**1512505**
UHV Cable/connector assemblies	Floating	1000	KAP50-FS-1000	**1512506**

All cable assemblies are terminated with user-end connector on opposite end.

All dimensions are nominal in millimetres unless specified

Connectors and cables

Braid and plate

Braided shielding

BSS8

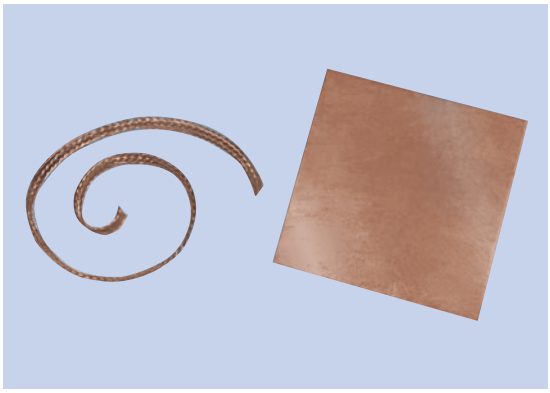
Features

- UHV-Compatible
- Supplied in 300mm lengths
- Custom lengths on request

Material	Size	Use with	Reference	Part number
Stainless steel	3.2	3.2 coaxial cable	BSS8	**9941000**
Stainless steel	6.4	6.4 coaxial cable	BSS4	**9941001**

OFHC Copper braid and plate

OFHC6-1000 and OFHC1



Features

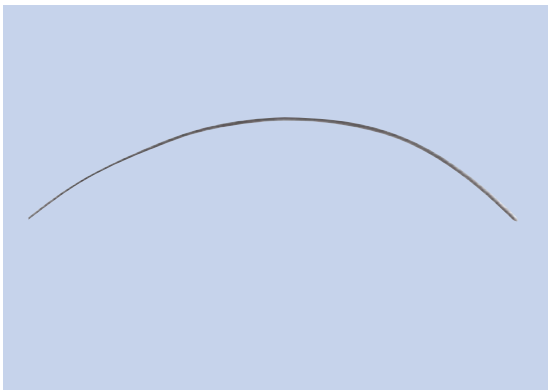
- Oxygen-free, high-conductivity copper
- Suitable for use in UHV
- Suitable for use to 250°C
- Good thermal conductivity
- Good electrical conductivity

Description	Reference	Part number
OFHC Braid, flat, 1m long	OFHC6-1000	**1512200**
OFHC Sheet, 100mm, 2mm thick	OFHC1	**1512201**

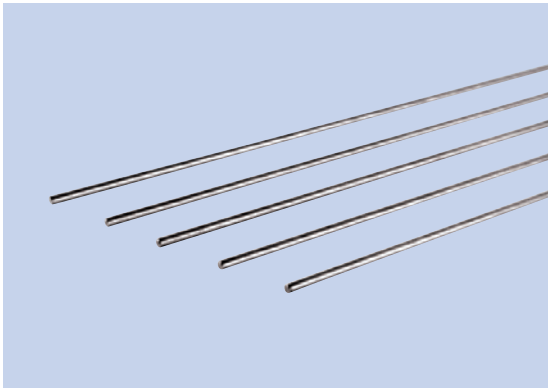
All dimensions are nominal in millimetres unless specified

Wire and rod

W-GL040*



WSS094



Features

- Supplied in 300mm lengths
- Custom lengths on request to maximum of 1m

Material	Size	Notes	Reference	Part number
Copper	1.0	Glidcop® Alloy	W-GL040*	**9943000**
Copper	1.3	Glidcop® Alloy	W-GL05*	**9943001**
Copper	0.8	OFHC	W-OFHC032	**9943010**
Copper	1.3	OFHC	W-OFHC050	**9943011**
Copper	2.4	OFHC	W-OFHC094	**9943012**
Copper	6.4	OFHC	W-OFHC250	**9943013**
Nickel	0.8	Alloy 200	W-N032	**9943020**
Nickel	1.3	Alloy 200	W-N050	**9943021**
Nickel	2.3	Alloy 200	W-N092	**9943022**
Nickel	6.4	Alloy 200	W-N250	**9943023**
Stainless steel	0.8	Alloy 304	W-SS032	**9943030**
Stainless steel	1.3	Alloy 304	W-SS050	**9943031**
Stainless steel	2.4	Alloy 304	W-SS094	**9943032**
Stainless steel	6.4	Alloy 304	W-SS250	**9943033**

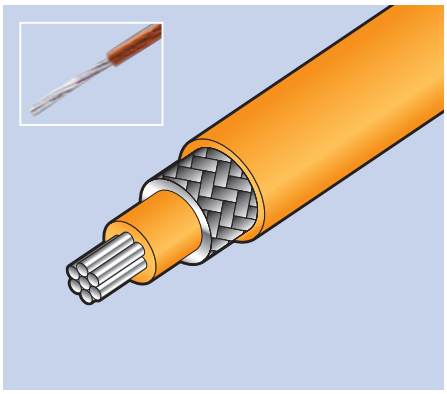
* **Recommended** for use in flexible coaxial cables – resists work hardening

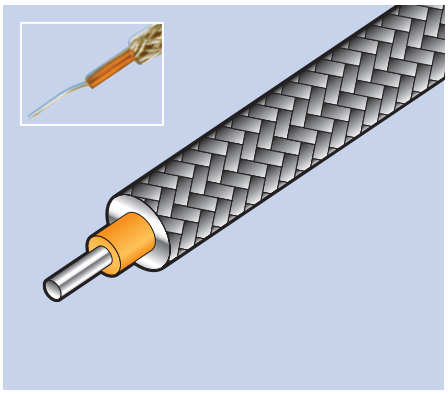
Connectors and cables

In-vacuum wiring – Kapton® insulated

Features

- High-strength Kapton® type-F film
- Silver-plated copper conductors
- Single, multi-strand and coaxial
- Cryogenic instrumentation wire
- Type-K thermocouple wire
- UHV-compatible construction
- High-temperature rated to 260°C





Specifications

Voltage[1]	See each table
Current	See each table
Materials	
Conductor	Silver-plated copper
Insulation	Kapton® Type F film
Kapton® properties	
Dielectric constant	2.9
Dielectric strength	80kV/mm
Dissipation factor	0.001
Initial tear	13.4kg/mm
Tensile strength	10MPa
Elongation	75%
Moisture absorption	0.4% @ 50% RH
Radiation resistance	10^9 Rads
Vacuum range UHV	1×10^{-11} mbar
Temperature range[2]	
Conventional	260°C
Cryogenic	-269°C

[1] Electrical ratings are maximum test values

[2] Overall ratings must be adjusted to that of the lowest rated component

Description

Caburn-MDC's Kapton® insulated in-vacuum wiring is designed for high and ultrahigh vacuum environments up to 260°C. All conductors and braided shields (coaxial cable shields) are silver plated copper wire. Insulation is Kapton® type-F film that is applied and heat treated to effectively minimize trapped volumes of gas and maintain mechanical strength.

Included in this section are Caburn-MDC exclusive in-vacuum ribbon cables. These ribbon cables are available in either high or ultrahigh vacuum grades. UHV ribbon cables consist of multiple strands of Kapton® insulated wires that are bundled together with a PEEK® Polyether ether ketone monofilament weaving. Caburn-MDC ribbon cables are designed to complement its line of subminiature-C and D feedthroughs as detailed on pages 266 to 269.

High vacuum PTFE ribbon cable is available as an economical solution for less demanding vacuum applications.

For sensitive UHV instrumentation applications such as AFM, atomic force microscopy or STM, scanning tunnelling microscopy requiring minimal loads and maximum flexibility, Caburn-MDC offers standard and cryogenic fine instrumentation wires. The cryogenic instrumentation wire is suitable for temperatures down to -269°C 4°K-liquid helium. Securing and fastening these fine instrumentation wires is made simple with the use of conductive in-vacuum adhesives as detailed on page 471.

Wire strippers and glass-ceramic colour identification beads are some of the accessories offered to facilitate working with the extensive selection of in-vacuum wire and cable products.

UHV 0.61mm diameter coaxial cable

Cable type	Cable length	Jacket dia.	Wire dia.	Reference	Part number
Coaxial	10m	1.47	7 x 0.2	KAP4	**1512005**

Resistance of 87.2□/km, a capacitance 300pf/m, a voltage rating of 600V AC, 2kV DC and a current of 4.5A maximum

Impedance = 18Ω

UHV 0.25mm diameter coaxial cable

Cable type	Cable length	Jacket dia.	Wire dia.	Reference	Part number
Coaxial	10m	0.89	0.25	KAP3	**1512004**

Resistance of 375.8□/km, a capacitance 180pf/m, a voltage rating of 600V AC, 2kV DC and a current of 1.5A maximum

Impedance = 32□

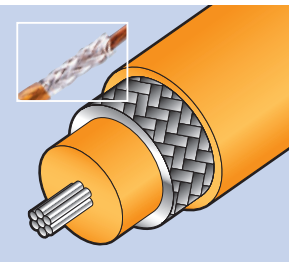
All dimensions are nominal in millimetres unless specified

Connectors and cables

In-vacuum wiring – Kapton® and PTFE insulated

UHV 50Ωcoaxial cable

KAP50-5



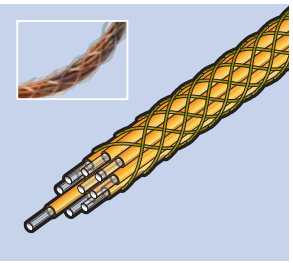
Cable type	Cable length	Jacket dia.	Wire dia.	Reference	Part number
Coaxial	5m	2.3	7 x 0.15	KAP50-5	1512006

Resistance of 140Ω/km, a capacitance 95pf/m, a voltage rating of 600V AC, 4kV DC and a current of 1A maximum

Kapton® insulated with a silver plated wire screen and Kapton® sheath

UHV Circular cable Colour coded

UHV Circular cable



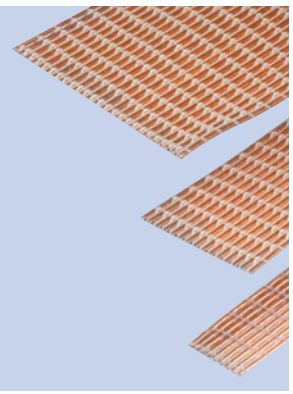
No. of wires	Cable length	Jacket dia.	Braid dia.	Insulator dia.	Wire dia.	Reference	Part number
9	500	1.47	1.22	0.89	7 x 0.1	CCAB9-500	1512761
9	1000	1.47	1.22	0.89	7 x 0.1	CCAB9-1000	1512762
9	2500	1.47	1.22	0.89	7 x 0.1	CCAB9-2500	1512763

9 way cable with a PEEK® woven outer sleeving

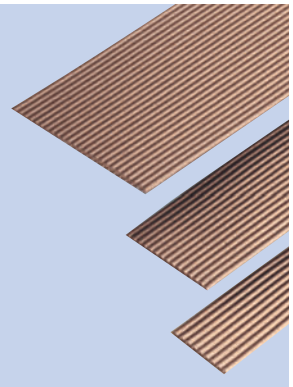
Resistance of 244Ω/km, a voltage rating of 600V AC, 840V DC and a current of 1.5A

Kapton® insulated and HV PTFE ribbon cable

UHV Ribbon



HV Ribbon



No. of wires	Cable length	Cable width	Cable thickness	Wire dia.	Reference	Part number
UHV **Kapton® insulated**						
9	500	11	1	7 x 0.127	KAP-R9-500	1512100
9	1000	11	1	7 x 0.127	KAP-R9-1000	1512103
9	2500	11	1	7 x 0.127	KAP-R9-2500	1512150
15	500	19	1	7 x 0.127	KAP-R15-500	1512101
15	1000	19	1	7 x 0.127	KAP-R15-1000	1512104
15	2500	19	1	7 x 0.127	KAP-R15-2500	1512151
25	500	30	1	7 x 0.127	KAP-R25-500	1512102
25	1000	30	1	7 x 0.127	KAP-R25-1000	1512105
25	2500	30	1	7 x 0.127	KAP-R25-2500	1512152
HV **PTFE insulated**						
9	500	10	1	7 x 0.2	HVR9-500	1512770
9	1000	10	1	7 x 0.2	HVR9-1000	1512771
9	2500	10	1	7 x 0.2	HVR9-2500	1512772
15	500	19	1	7 x 0.2	HVR15-500	1512773
15	1000	19	1	7 x 0.2	HVR15-1000	1512774
15	2500	19	1	7 x 0.2	HVR15-2500	1512775
25	500	30	1	7 x 0.2	HVR25-500	1512776
25	1000	30	1	7 x 0.2	HVR25-1000	1512777
25	2500	30	1	7 x 0.2	HVR25-2500	1512778

Voltage rating of 600V AC, 4kV DC and a current 1A maximum

Use two lengths of 25-wire cable for 50-pin applications

All UHV cable assemblies are bakeable to 250°C

All HV cable assemblies are bakeable to 105°C

PTFE cable without plugs bakeable to 200°C

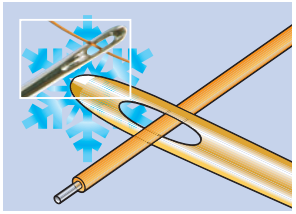
All dimensions are nominal in millimetres unless specified

Connectors and cables

In-vacuum wiring – Thermocouple

UHV **0.14mm stainless steel cryogenic instrumentation wire**

KAP4K-014

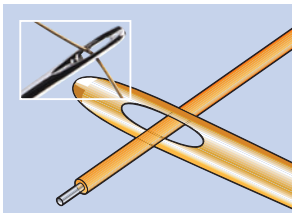


Cable type	Cable length	Jacket dia.	Wire dia.	Reference	Part number
Plain	10m	0.39	0.12	KAP4K-014	**1512081**

This is an ultra thin non-magnetic UHV compatible connecting wire suitable for use in cryogenic systems down to liquid helium temperature -269°C (4°K) and a voltage rating of 2kV DC

UHV **Fine instrumentation wire**

KAP012



Cable type	Cable length	Jacket dia.	Wire dia.	Reference	Part number
Plain[2]	10m	0.50	7 x 0.08	KAP08[1]	**1512001**
Plain[3]	10m	0.16	0.12	KAP012	**1512000**

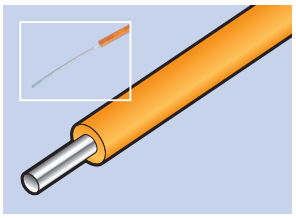
[1] Ideally suited for delicate instrumentation applications such as UHV AFM and STM

[2] Resistance of 510Ω/km

[3] Resistance of 1.6kΩ/km

UHV **0.25mm diameter wire**

KAP1

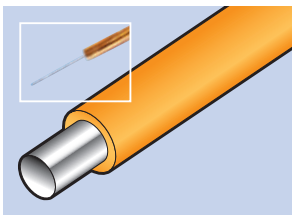


Cable type	Cable length	Jacket dia.	Wire dia.	Reference	Part number
Plain	10m	0.53	0.25	KAP1	**1512002**

Resistance of 375Ω/km, a voltage rating of 600V AC, 2kV DC and a current of 1.5A

UHV **0.61mm diameter wire**

KAP2

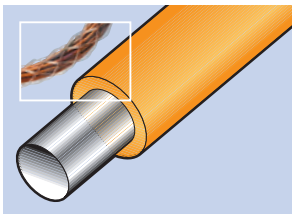


Cable type	Cable length	Jacket dia.	Wire dia.	Reference	Part number
Plain	10m	0.87	0.61	KAP2	**1512003**

Resistance of 64.0Ω/km, a voltage rating of 600V AC, 2kV DC and a current of 5.5A

UHV **1mm diameter wire**

KAP10



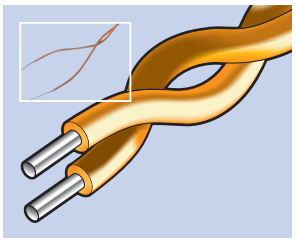
Cable type	Cable length	Jacket dia.	Wire dia.	Reference	Part number
Plain	10m	1.52	1.0	KAP10	**1512009**

Resistance of 22.6Ω/km, a voltage rating of 3.6kV AC, 5kV DC and a current of 10A

All dimensions are nominal in millimetres unless specified

UHV Thermocouple insulation wire

KAP-TCK2



Cable type	Cable length	Wire dia.	Reference	Part number
Type-K	2m	0.2	KAP-TCK2	**1512070**

Chromel® and Alumel® twisted thermocouple pair

Wire ends are not welded and left open for customer use and installation

For use with low voltage instrumentation applications only

Alumel® (negative pole) is magnetic

Thermocouple wire pairs

W-TCC010

Features

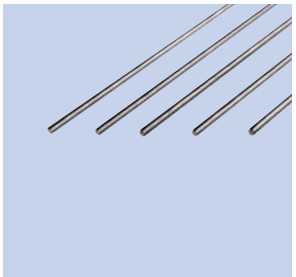
- Price is per pair 300mm length
- Minimum order quantity 300mm
- Custom lengths on request to maximum of 1m

Cable type	Pair materials and polarity		Size	Reference	Part number
C[1]	Alloy 405®	+	0.25	W-TCC010	**9942002**
C[1]	Alloy 426®	–	0.51	W-TCC020	**9942001**
C[1]			1.27	W-TCC050	**9942003**
E	Chromel®	+	.25	W-TCE010	**9942102**
E	Constantan®	–	0.51	W-TCE020	**9942101**
E			1.27	W-TCE050	**9942103**
J	Iron	+	0.25	W-TCJ010	**9942202**
J	Constantan®	–	0.51	W-TCJ020	**9942201**
K			0.25	W-TCK010	**9942302**
K	Chromel®	+	0.51	W-TCK020	**9942301**
K	Alumel®	–	0.81	W-TCK032	**9942300**
K			1.27	W-TCK050	**9942303**
R & S	Copper	+	0.25	W-TCR010	**9942402**
R & S	Alloy 11	–	0.51	W-TCR020	**9942401**
T	Copper	+	0.25	W-TCT010	**9942502**
T	Constantan®	–	0.51	W-TCT020	**9942501**

[1] Extension (compensating) grades only

Thermocouple wire pairs

TCR-CHR



Features

- Price is per pair 300mm length
- Minimum order quantity 300mm
- Custom lengths on request to maximum of 1m

Cable type	Pair materials and polarity		Size	Reference	Part number
E & K	Chromel®	+	3.2	TCR-CHR	**9942900**
K	Alumel®	–	3.2	TCR-AL	**9942910**
J	Iron	+	3.2	TCR-FE	**9942920**
E & T	Constantan®[2]	+	3.2	TCR-CONET	**9942930**
J	Constantan®[2]	–	3.2	TCR-CONJ	**9942940**

[2] There are two forms of Constantan® – one is matched to iron, the other to copper and Chromel®

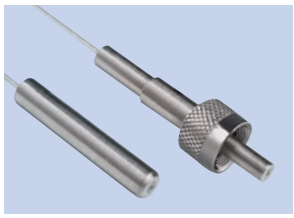
All dimensions are nominal in millimetres unless specified

Connectors and cables

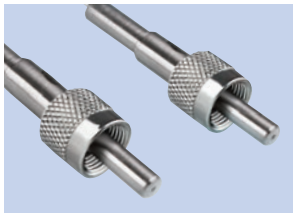
Fibre optics – cables and couplers

UHV **UV and IR fibre optic cables**

FO-UV600-300S single SMA



FO-IR-300D dual SMA

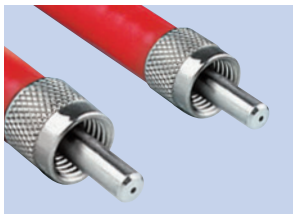


Fibre type	Cable length	Connector type	Connector diameter	Core	Reference	Part number
Ultraviolet						
UV	300	Single SMA	8	600µm	FO-UV600-300S	**1513000**
UV	600	Single SMA	8	600µm	FO-UV600-600S	**1513001**
UV	900	Single SMA	8	600µm	FO-UV600-900S	**1513002**
UV	300	Dual SMA	8	600µm	FO-UV600-300D	**1513100**
UV	600	Dual SMA	8	600µm	FO-UV600-600D	**1513101**
UV	900	Dual SMA	8	600µm	FO-UV600-900D	**1513102**
Infrared						
IR	300	Single SMA	8	600µm	FO-IR600-300S	**1513003**
IR	600	Single SMA	8	600µm	FO-IR600-600S	**1513004**
IR	900	Single SMA	8	600µm	FO-IR600-900S	**1513005**
IR	300	Dual SMA	8	600µm	FO-IR600-300D	**1513103**
IR	600	Dual SMA	8	600µm	FO-IR600-600D	**1513104**
IR	900	Dual SMA	8	600µm	FO-IR600-900D	**1513105**

Cables with single SMA connector are non-terminated on opposite end

Air-service armoured UV and IR fibre optic cables

CP-IR600-5



Fibre type	Cable length	Cable diameter	Connector type	Connector diameter	Connector length	Reference	Part number
Ultraviolet							
UV	5m	5	Dual SMA	8	15	CP-UV600-5	**1513300**
UV	10m	5	Dual SMA	8	15	CP-UV600-10	**1513301**
Infrared							
IR	5m	5	Dual SMA	8	15	CP-IR600-5	**1513200**
IR	10m	5	Dual SMA	8	15	CP-IR600-10	**1513201**

Caburn-MDC armoured fibre optic cables are fitted with 0.250-36 UNC SMA connectors on both ends

Fibre optic couplers are required when connecting to other cables or feedthroughs

UHV **Air-service fibre optic couplers**

ADVS

ADAS

Service type	Connector length	Thread type	Size UNS	Width across flats	Reference	Part number
UHV	25	Dual SMA	0.25"-36	–	ADVS	**1513400**
Air	25	Dual SMA	0.25"-36	9.5	ADAS	**1513401**

Vacuum couplers do not have hexagonal wrench flats and include an in-vacuum vent hole

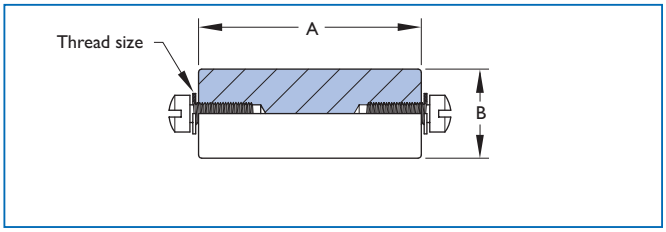
All dimensions are nominal in millimetres unless specified

Ceramic stand-offs Steatite

Stand-offs

Features

- UHV-compatible
- Supplied with UNF screws



DC (kV) Air	DC (kV) Vacuum	UNF Thread size	A	B	Reference	Part number
3	7	6-32	10	10	CSS1	9951200
4	10	6-32	13	10	CSS2	9951201
5	12	8-32	16	13	CSS3	9951202
6	15	8-32	19	10	CSS4	9951203
8	20	6-32	25	10	CSS5	9951204
8	20	8-32	25	13	CSS6	9951205
8	20	10-32	25	19	CSS7	9951206
10	25	¼"-20	32	25	CSS8	9951207
14	35	8-32	51	13	CSS9	9951208
14	35	10-32	51	19	CSS10	9951209
16	40	¼"-20	64	25	CSS11	9951210

Ceramic beads

Beads

Features

- UHV-compatible
- Price is for 300mm length
- High-purity alumina 95% Al_2O_3

Bead length	Outside diameter	Beads per length	Inside diameter	Accepts wire dia.	Reference	Part number
2.8	2.5	125	1.3	1.1	CB045	9951000
4.7	4.6	85	2.2	1.6	CB064	9951001
4.3	4.0	73	1.7	1.3	CB050	9951002
6.6	6.1	56	2.7	2.6	CB102	9951003
6.6	6.1	53	3.7	3.3	CB128	9951004
10.2	9.3	38	3.7	3.3	CBL128	9951005

Ceramic spacers 4 to 35 pins

Spacers

Features

- UHV-compatible
- High-purity alumina 95% Al_2O_3

Pins	Diameter	Thick	Hole	Reference	Part number
4 and 10	16	3.4	1.8	CS410-2	9951100
6	16	3.4	1.8	CS6-2	9951101
10	16	3.4	1.0	CS10-1	9951102
20	32	3.2	1.0	CS20-1	9951103
20	32	3.2	1.8	CS20-2	9951104
35	43	3.2	1.8	CS35-2	9951105
35	35	3.2	1.8	CS35-2/35	9951106

All dimensions are nominal in millimetres unless specified

Connectors and cables

Tools and safety equipment

Description

Caburn-MDC offers a variety of tools suitable for use with some or all of the products in this section.

Crimping Pliers

These pliers are ideal for use in the fabrication of 3.2mm coaxial vacuum cables. They are used to crimp the aluminium retainers which fasten coaxial shielding to cable terminations.

All materials required for building your own coaxial cable assembly are available in this catalogue. Cable termination kits, stainless steel braiding, Glidcop® copper wire and fish-spine alumina ceramic insulator beads are detailed on the previous pages.

Spline Wrench

These wrenches are for use with No. 4 six spline socket set screws as those used on power push-on connectors. They are made of hardened steel and sold in packages of ten.

High Voltage Protective Cover

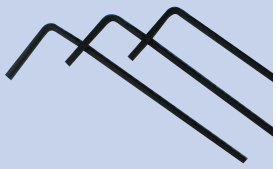
Caburn-MDC Protective Covers are designed to clamp on to the outside diameter of a standard flanged DN40 CF feedthrough. This device provides both safety and convenience: exposed high voltage conductors can be contained and wire connectors fed into a cable which attaches to the back of the acrylic cover.

Tools and safety equipment

Crimping pliers

Description	Reference	Part number
Use with 3.2 (⅛") cable termination kit	CP8	9991000
Use with 6.4 (¼") cable termination kit	CP4	9991001

Spline wrench

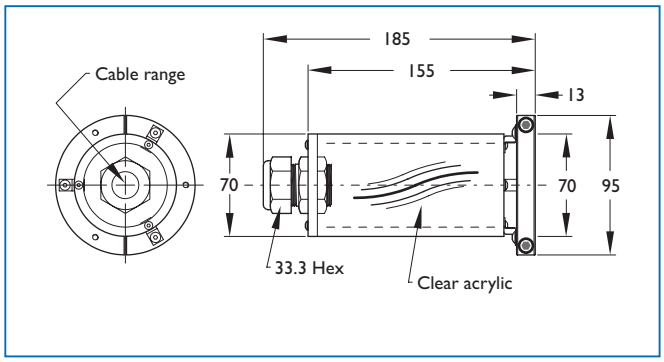


Features

- For use with power push-ons

Description	Reference	Part number
10 per pack number 4 six spline	SPW	9991100

High voltage protective cover

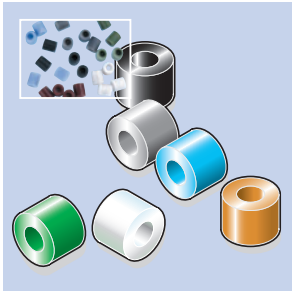


Cable range	Reference	Part number
3.8 – 8.1	HVE-1	640050
5.8 – 11.9	HVE-2	640051
8.9 – 16.0	HVE-3	640052
13.0 – 18.0	HVE-4	640053

All dimensions are nominal in millimetres unless specified

UHV Colour identification beads

KAPWI-6



Cable type	Bead ID	Bead length	Maximum wire diameter	Reference	Part number
All	1	2.3	0.89	KAPWI-6	1510200

Ideally suited for the identification of in-vacuum Kapton® insulated wires which have no colour identification.

Each kit consists of six packs of 50 beads in six different colours: green, grey, blue, brown, white and black.

Wire strippers

KAPS1 and KAPS2

Cable type	Conductor		Reference	Part number
	Minimum	Maximum		
All	0.12	0.40	KAPS1	1512050
All	0.25	0.80	KAPS2	1512051

Ideally suited for Kapton® insulation stripping.

UHV Conductive glue

UHVGLUE -H21D and -H27D

Glue type	Maximum temperature	Reference	Part number
Conductive	150°C	UHVGLUE-H21D	1260217
Conductive	270°C	UHVGLUE-H27D	1260218

Ideally suited for fine instrumentation wires.

Available in 28gram containers.

Important

Hardening times	HD21	5 mins at 150°C or 12 hrs at 50C°
	HD27	1 hr at 150°C
Shelf life		See pack
Resistivity		0.1 to 0.3mΩcm

Crimping tools

DC-POS1

Accessory type	Reference	Part number
Crimping tool for male/female contacts (DPINMC + DPINFC)	DCT1	1512056
HV/Air crimping tool for male/female contacts (DPIN-MPOS + DPIN-FPOS)	DCT-POS1	1510115

All dimensions are nominal in millimetres unless specified