

Breaks & Envelopes

Introduction

Breaks and envelopes are tubular electrical isolators which are composed of metal adapters brazed to both ends of a ceramic insulator. These assemblies are used primarily for voltage isolation. Assemblies with inner diameters less than 76.2mm are typically referred to as breaks and those with larger inner diameters are called envelopes.

LewVac offers several mounting options for breaks and envelopes: CF flanged, KF flanged and weldable. Custom designs and configurations are available upon request.

Cryogenic Breaks



Electrical breaks are often required in transmission lines for cryogenic fluid. Several standard designs are offered which are safe to operate to -200°C. These cryogenic breaks are intended to be TIG welded into cryogenic fluid transmission lines, and typical adapter designs are available with 3.2mm to 9.5mm diameters.

Liquid Breaks



Coolant fluid lines often require an electrical break. Installation of liquid breaks into a transmission line for coolant fluid requires soldering or low temperature brazing (below 700°C). Standard adapters fit 6.5mm to 12.7mm diameter tubes.

Vacuum Breaks & Envelopes



Various transitions in vacuum systems require voltage isolation. Breaks and envelopes are all suitable for ultra high vacuum environments. Both are constructed using a high purity alumina insulator sealed into stainless steel or Kovar® sleeve adapters.

Vacuum breaks are available with nominal tube diameters up to 61mm, and voltage ratings up to 40,000 volts DC. Standard designs include CF flanged, KF flanged and weldable.

Vacuum envelopes are available with nominal tube diameters up to 203.2mm, and voltage ratings up to 15,000 volts DC. Standard designs include CF flanged and weldable.

Cryogenic Breaks



Specifications:

Voltage¹Up to 10kV DC

Material

AdapterKovar® / St.St.

InsulationAlumina ceramic

Temperature Range²-200°C to 450°C

¹ - Please see section introduction for safety information.
² - Assembly rating is reduced to that of the lowest rated component.

Features:

- Voltage insulation up to 10kV.
- Custom versions available on request.

Fig. 1.

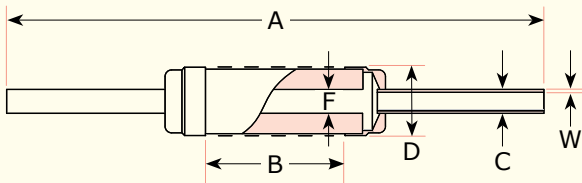


Fig. 2.

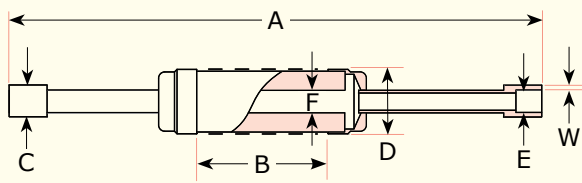


Fig. 3.

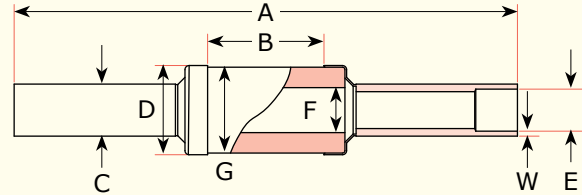
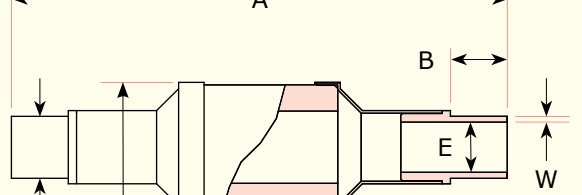


Fig. 4.



All dimensions are nominal in millimetres unless otherwise specified

5kV



Fig.	A	B	C	D	E	F	W	Part Code	Price £	Price €
1	45.7	7.6	2.4	7.9	-	2.8	0.4	CB5-2.4-46	POA	€0
1	58.4	7.6	2.4	7.9	-	2.8	0.4	CB5-2.4-58	£52	€60
1	45.7	7.6	3.2	7.9	-	2.8	0.4	CB5-3.2-46	£56	€65
1	58.4	7.6	3.2	7.9	-	2.8	0.4	CB5-3.2-58	£56	€65
1	72.4	7.6	3.2	7.9	-	2.8	0.4	CB5-3.2-72.4	£56	€65
1	46.9	7.6	3.2	7.9	-	2.8	0.4	CB5-3.2-43	£67	€78
2	59.7	7.6	4.1	7.9	3.4	2.8	0.4	CB5-3.2S-59	£77	€89

10kV



Fig.	A	B	C	D	E	F	G	W	Part Code	Price £	Price €
3	76.2	17.0	7.9	13.7	6.4	6.9	12.6	0.8	CB10-7.9-76	£84	€97
4	76.2	18.5	6.4	13.7	4.6	-	-	0.9	CB10-6.4-76	£84	€97
4	76.2	8.9	9.5	13.7	7.7	-	-	0.9	CB10-9.7-76	£144	€166
4	76.2	20.1	9.5	13.7	7.7	-	-	0.9	CB10-9.7-76-L	POA	POA
3	76.2	17.0	11.1	13.7	9.6	11.2	19.1	0.8	CB10-11.2-76	£144	€166

All dimensions are nominal in millimetres unless otherwise specified

Water Breaks



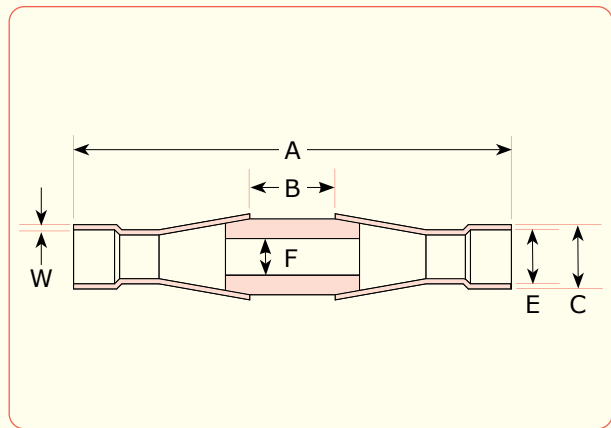
Specifications:

Voltage ¹	Up to 5kV DC
Material	
Adapter	OFHC Copper
Insulation	Alumina ceramic
Max Temperature ²	450°C

¹ - Please see section introduction for safety information.
² - Assembly rating is reduced to that of the lowest rated component.

Features:

- Voltage insulation up to 5kV.
- Custom versions available on request.



All dimensions are nominal in millimetres unless otherwise specified

To 5kV



A	B min.	C	E	F	W	Part Code	Price £	Price €
76.2	12.7	8.1	6.5	5.3	0.9	WB5-6.5-76	£144	€166
76.2	12.7	11.2	9.7	6.4	0.9	WB5-9.7-76	£155	€179
76.2	12.7	15.0	12.8	10.4	1.0	WB5-12.8-76	£165	€190

All dimensions are nominal in millimetres unless otherwise specified

Vacuum Breaks & Envelopes



Specifications:

Voltage¹Up to 60kV DC

Material

AdapterKovar® / St.St.

InsulationAlumina ceramic

Temperature Range²-200°C to 450°C

¹ - Please see section introduction for safety information.

² - Assembly rating is reduced to that of the lowest rated component.

Features:

- Voltage insulation up to 60kV
- Custom versions available on request.

Fig. 1.

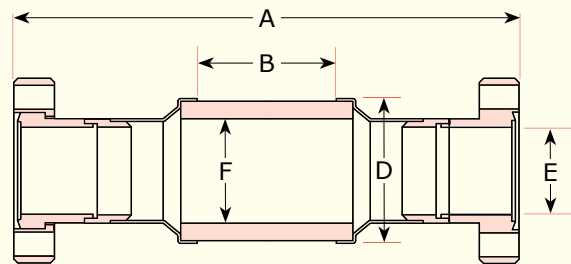


Fig. 2.

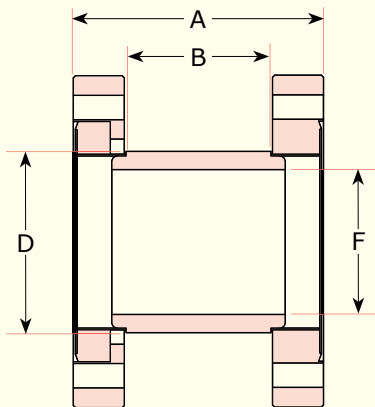
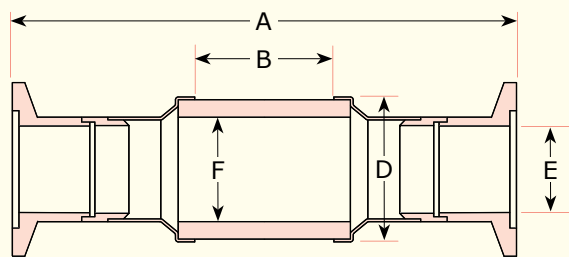


Fig. 3.



CF Flanged



Voltage, kV	Fig.	A	B min.	D	E	F	Flange	Part Code	Price £	Price €
5	1	73.6	7.6	25.4	16.0	19.1	DN16CF	VB5-16CF	£234	€270
15	1	91.9	25.4	25.4	16.0	19.1	DN16CF	VB15-16CF	£263	€303
30	1	116.8	50.8	25.4	16.0	19.1	DN16CF	VB30-16CF	£335	€386
5	1	67.3	8.2	42.2	34.8	31.8	DN40CF	VB5-40CF	£269	€310
30	1	106.7	50.8	42.2	34.8	31.8	DN40CF	VB30-40CF	£273	€314
60	1	160.0	101.6	42.2	34.8	31.8	DN40CF	VB60-40CF	£432	€497
10	2	46.7	19.1	16.5	-	7.9	DN16CF	VB10-16CF	£453	€521
20	2	76.2	38.1	35.6	-	22.9	DN40CF	VB20-40CF	£594	€684
30	2	101.6	50.8	63.5	-	50.8	DN63CF	VB30-63CF	£822	€946
40	2	121.9	76.2	76.2	-	61.0	DN100CF	VB40-100CF	£936	€1077

KF Flanged



Voltage, kV	Fig.	A	B min.	D	E	F	Flange	Part Code	Price £	Price €
5	3	73.6	7.8	25.4	16.0	19.1	DN16KF	VB5-16KF	£234	€270
15	3	91.9	25.4	25.4	16.0	19.1	DN16KF	VB15-16KF	£263	€303
30	3	116.8	50.8	25.4	16.0	19.1	DN16KF	VB30-16KF	£335	€386
5	3	63.5	8.2	42.2	34.8	31.8	DN40KF	VB5-40KF	£269	€310
30	3	104.1	50.8	42.2	34.8	31.8	DN40KF	VB30-40KF	£273	€314
60	3	157.5	101.6	42.2	34.8	31.8	DN40KF	VB60-40KF	£432	€497
5	3	63.5	6.3	42.2	34.8	31.8	DN50KF	VB5-50KF	£264	€304
30	3	102.4	50.8	42.2	34.8	31.8	DN50KF	VB30-50KF	£279	€321
60	3	156.7	101.6	42.2	34.8	31.8	DN50KF	VB60-50KF	£462	€532

Weldable



Voltage, kV	Fig.	A	B min.	C	D	E	F	W	Part Code	Price £	Price €
5	4	48.3	7.6	19.1	25.4	16.0	19.1	0.9	VB5-19.1-W	£153	€176
15	4	66.5	25.4	19.1	25.4	16.0	19.1	0.9	VB15-19.1-W	£175	€202
30	4	116.8	50.8	19.1	25.4	16.0	19.1	0.9	VB30-19.1-W	£239	€275
5	4	55.9	8.2	38.1	42.2	34.8	31.8	1.7	VB5-34.8-W	£155	€179
30	4	96.5	50.8	38.1	42.2	34.8	31.8	1.7	VB30-34.8-W	£165	€190
60	4	149.9	101.6	38.1	42.2	34.8	31.8	1.7	VB60-34.8-W	£295	€340
10	5	39.4	19.1	12.9	16.5	-	7.9	-	VB10-12.9-W	£334	€385
20	5	65.5	38.1	30.5	35.6	-	22.9	-	VB20-30.5-W	£377	€434
30	5	85.3	50.8	60.3	63.5	-	50.8	-	VB30-60.3-W	£432	€497
40	5	110.7	76.2	71.1	76.2	-	61.0	-	VB40-71.1-W	£475	€547

Fig. 4.

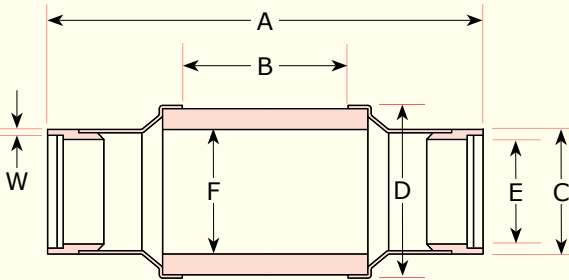
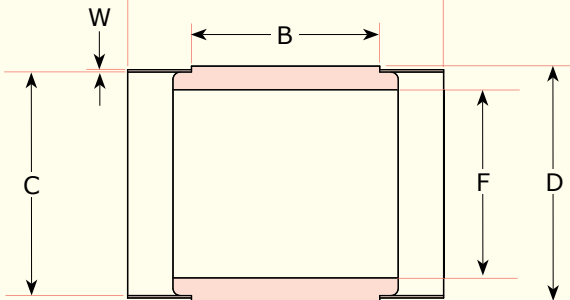


Fig. 5.



All dimensions are nominal in millimetres unless otherwise specified

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Vacuum Breaks & Envelopes



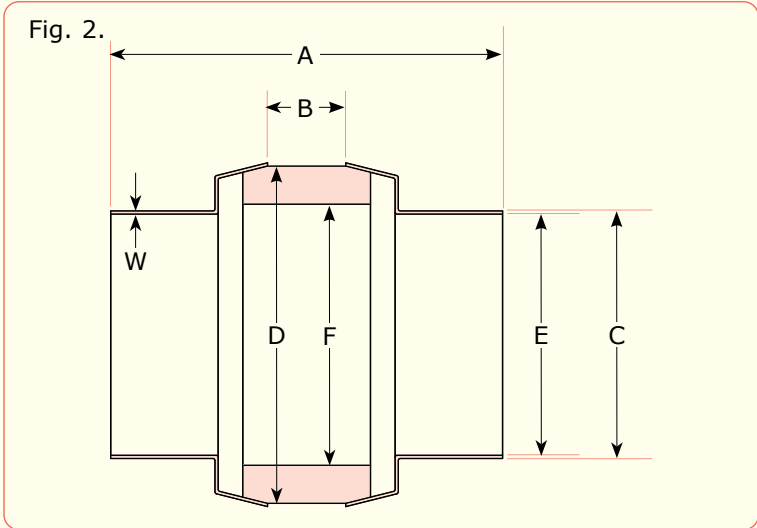
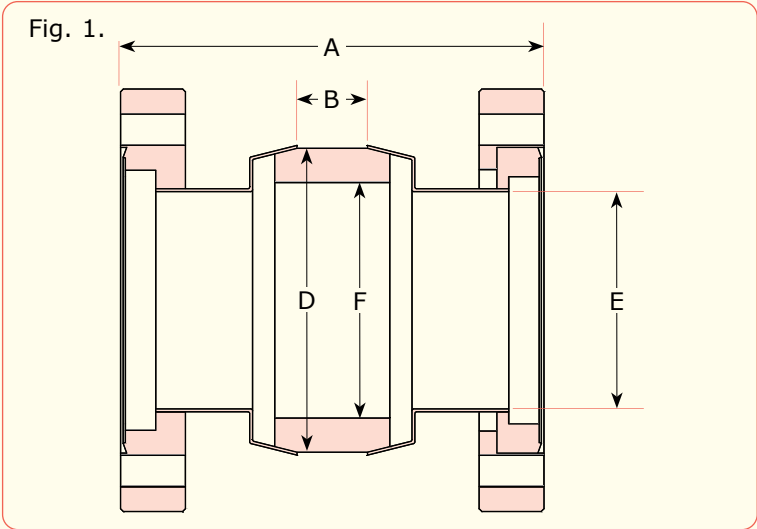
Specifications:

Voltage ¹	Up to 20kV DC
Material	
Adapter	Kovar® / St.St.
Insulation	Alumina ceramic
Temperature Range ²	-200°C to 450°C

¹ - Please see section introduction for safety information.
² - Assembly rating is reduced to that of the lowest rated component.

Features:

- Voltage insulation up to 20kV.
- Custom versions available on request.



All dimensions are nominal in millimetres unless otherwise specified

CF Flanged



Voltage, kV	Fig.	A	B min.	D	E	F	Flange	Part Code	Price £	Price €
10	1	114.3	19.1	82.0	58.7	63.5	DN63CF	VE10-63CF	£1,006	€1157
10	1	117.3	19.1	108.0	95.3	88.9	DN100CF	VE10-100CF	£1,251	€1439
20	1	139.7	38.1	175.8	152.4	152.4	DN160CF	VE20-160CF	£2,146	€2468
20	1	146.1	38.1	223.5	196.9	196.9	DN200CF	VE20-200CF	£3161	€3636

Weldable



Voltage, kV	Fig.	A	B min.	C	D	E	F	W	Part Code	Price £	Price €
10	2	92.2	19.1	60.2	82.0	58.7	63.5	0.8	VE10-60.2W	£675	€777
10	2	90.7	19.1	96.8	108.0	95.3	88.9	0.8	VE10-96.8W	£817	€940
20	2	114.3	38.1	154.4	175.8	152.4	152.4	1.0	VE20-154.4W	£1,576	€1813
20	2	117.9	38.1	198.9	223.5	196.9	196.9	1.0	VE20-198.9W	£2,119	€2437

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