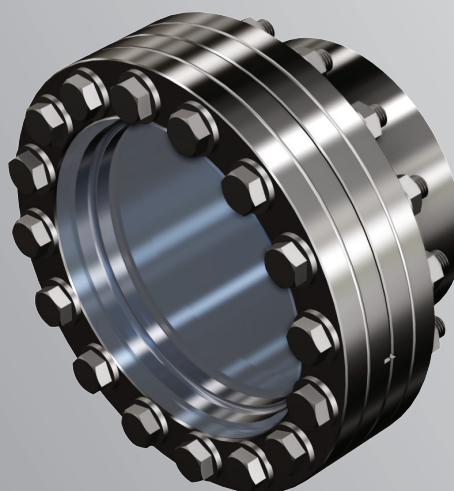
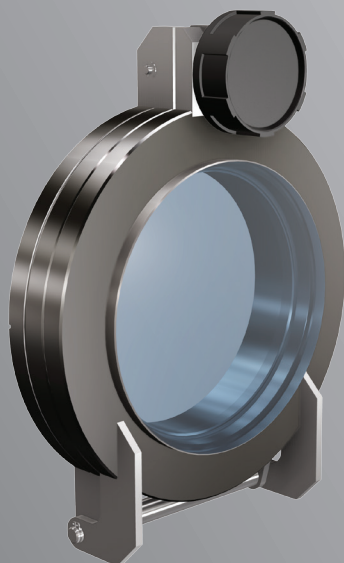
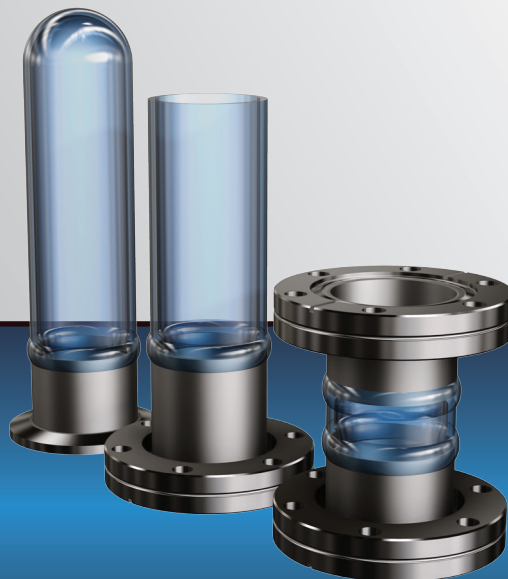
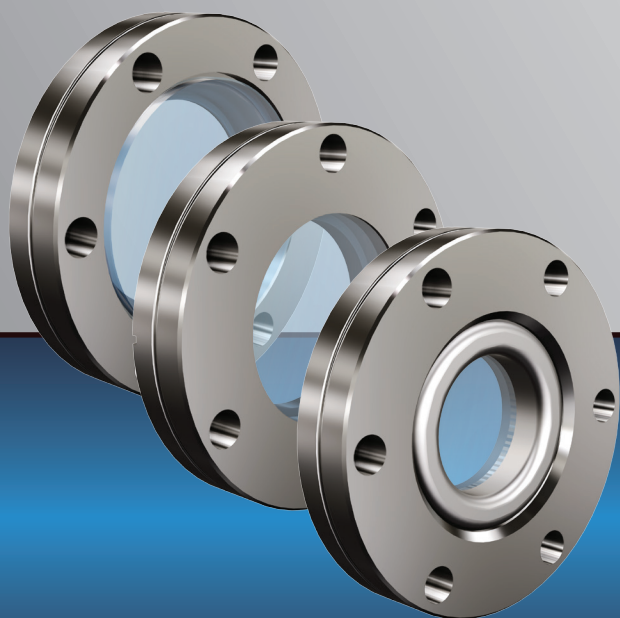




Huntington

Mechanical Labs, Inc.



VIEWPORTS & ADAPTERS

ULTRA-HIGH VACUUM COMPONENTS

**tec
tra**

For quotes and additional information, please contact:
Tectra GmbH - Phone: +49-(0)-69-720040 - Email: info@tectra.de



THIS SECTION: VIEWPORTS, ACCESS DOORS AND ADAPTERS

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ZERO LENGTH, SAPPHIRE & QUARTZ VIEWPORTS	3
VIEWPORT WELD STUBS	4
BELLOWS SEALED VIEWPORT SHUTTERS	4
ACCESS DOORS	5
GLASS-TO-METAL ADAPTERS	6
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VIEWPORTS

GLASS, SAPPHIRE & QUARTZ

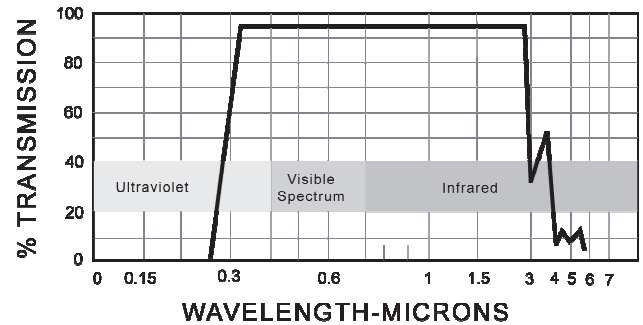
Huntington offers zero length viewports in glass, sapphire and fused silica to meet various needs in light transmission, bakeout temperatures and cost effectiveness. Viewports are an excellent choice for visually determining process control steps, photographing experimental results and taking optical pyrometer readings among other uses.

Glass viewports are the most common and cost effective solution, utilizing Corning® type 7056 glass for both high and ultra high vacuum applications. The excellent quality of glass allows for superior transmission in the visible spectrum and near ultraviolet region. Care should be taken with glass as scratches can cause point stress and premature failure. Care should also be exercised as rapid temperature fluctuations can cause cracking, resulting in implosion hazard.

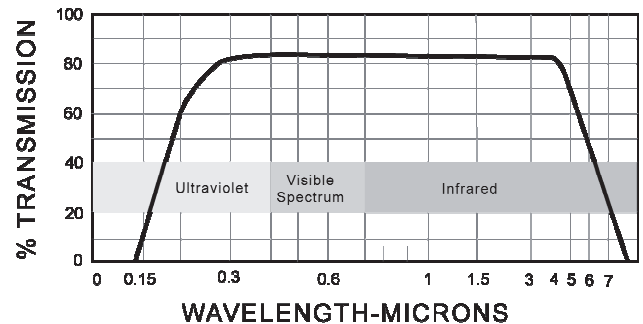
Sapphire viewports, available in both standard and custom designs, are offered for use in applications where a wide range of light transmission is necessary. The useful transmission range is .25 to 5.5 microns. Polished single crystal sapphire blanks are metalized and brazed to Kovar® sleeves for repeated high temperature bakeout and ultra high vacuum performance.

Fused Silica (Quartz) viewports are often preferred to glass viewports for their transparency to ultraviolet radiation. They have a higher resistance to abrasion or scratching and lower the threat of failure due to thermal expansion. Typically used in applications from -196°C to 200°C the quartz-to-metal bond is made with a lead alloy which melts at 300°C, thereby limiting its use to lower temperature installations. **A higher grade Z-cut Quartz Crystalline is available upon request.**

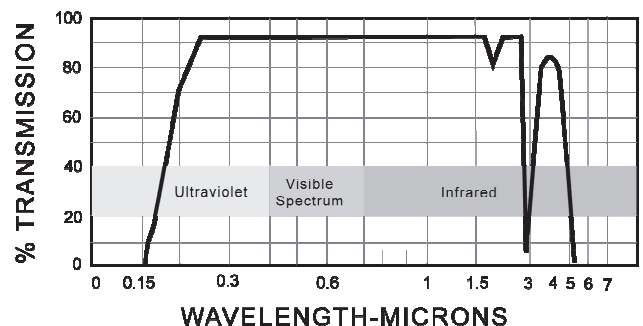
Glass Transmission Curve (Type 7056)



Sapphire Transmission Curve (UV Grade)



Fused Silica Transmission Curve (UV Grade)



Specifications

FLANGE: VAC-U-FLANGE® or SPEED FLANGE (on request)

PRESSURE RANGE: Below 1×10^{-11} Torr

BAKEOUT RANGE: Glass: 400°C, Sapphire: 450°C, Fused Silica: 200°C

WINDOW TO SLEEVE CONSTRUCTION:

7056 Glass: Matched Expansion Seal, w/Kovar® sleeve on 304 Stainless flange

Sapphire: Housekeeper Seal, w/Stainless steel sleeve and flange

Fused Silica: Housekeeper Seal, w/Stainless steel sleeve and flange

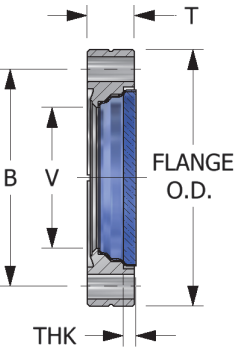
VIEWPORTS

GLASS, SAPPHIRE & QUARTZ

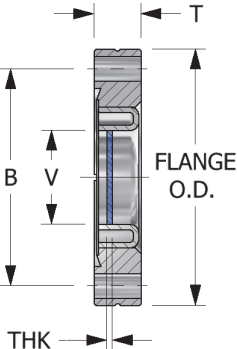
Section
2

Dimensions: inches (mm)

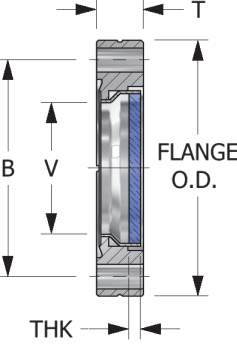
GLASS ZERO LENGTH VIEWPORTS

Material: 304 Stainless Steel Flange w/7056 Glass	FLANGE OD	B	T	V	GLASS THK.	WEIGHT (lbs.)	PART NUMBER
	1 1/3"	1.06	0.28	0.63	.070	0.5	VP-075
	2 3/4"	2.31	0.68	1.40	.105	1.0	VP-151
	3 3/8"	2.85	0.68	1.90	.170	1.0	VP-200
	4 1/2"	3.63	0.68	2.69	.170	2.5	VP-251
	4 5/8"	4.03	0.75	2.69	.170	2.5	VP-300
	6"	5.13	0.78	3.88	.200	3.0	VP-401
	6 3/4"	5.97	0.84	3.88	.375	3.0	VP-500
	8"	7.12	0.87	5.38	.375	3.5	VP-601

SAPPHIRE ZERO LENGTH VIEWPORTS

Material: 304 Stainless Steel Flange w/Single Crystal Al ₂ O ₃	FLANGE OD	B	T	V	GLASS THK.	WEIGHT (lbs.)	PART NUMBER
	1 1/3"	1.06	0.50	0.59	.062	0.5	VPS-075
	2 3/4"	2.31	0.50	0.94	.080	1.0	VPS-100
	4 1/2"	3.63	0.68	1.94	.094	1.5	VPS-200
Note: UV Grade							

FUSED SILICA ZERO LENGTH VIEWPORTS

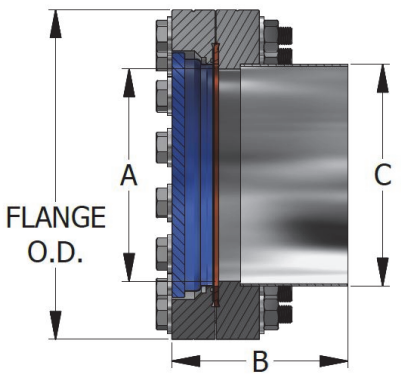
Material: 304 Stainless Steel Flange w/Fused Silica Quartz	FLANGE OD	B	T	V	GLASS THK.	WEIGHT (lbs.)	PART NUMBER
	1 1/3"	1.06	0.35	0.63	0.85	0.5	VPQ-062
	2 3/4"	2.31	0.50	1.40	.130	1.0	VPQ-150
	4 1/2"	3.63	0.68	2.69	.250	1.0	VPQ-250
	6"	5.13	0.78	3.84	.250	3.5	VPQ-400
	8"	7.12	0.88	5.38	.375	6.0	VPQ-600
Note: UV Grade							

FOR ALL TYPES. ADDITIONAL SIZES & COATINGS AVAILABLE UPON REQUEST

WELD STUBS/SHUTTERS

Dimensions: inches (mm)

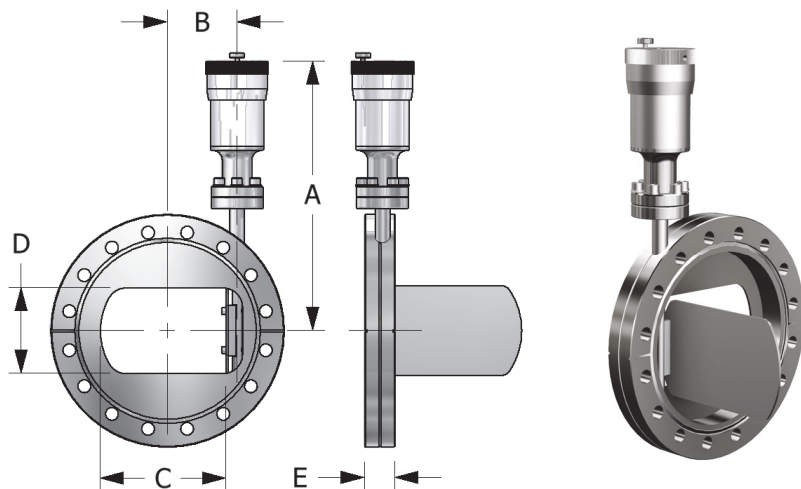
VIEWPORT WELD STUBS

Material: 304 Stainless Steel Flange w/7056 Glass or Fused Silica (Quartz)	FLANGE OD	A	B	C	VIEW MATERIAL	WEIGHT (lbs.)	PART NUMBER
	4 1/2"	2.37	2.88	2.50	Glass	4.5	WS-250
		2.37	2.88	2.50	F. Silica	4.5	WS-250-Q
	6"	3.83	2.88	4.00	Glass	9.0	WS-400
		3.83	2.88	4.00	F. Silica	9.0	WS-400-Q
	8"	5.83	2.88	6.00	Glass	12.0	WS-600
		5.83	2.88	6.00	F. Silica	12.0	WS-600-Q

Viewport Weld Stubs are perfect for installing a viewport into an existing chamber. Weld includes all mounting hardware & gasket. Alternate tube lengths available upon request.

BELLOWS SEALED VIEWPORT SHUTTERS

FLANGE OD	A	B	C	D	E	WEIGHT (lbs.)	PART NUMBER
2 3/4"	5.58	0.54	0.87	1.00	0.75	1.60	BFS-275
3 3/8"	5.93	0.85	1.47	0.87	0.62	2.20	BFS-337
4 1/2"	6.30	1.18	1.85	1.60	0.68	2.90	BFS-450
6"	7.12	1.78	3.24	2.30	0.78	3.80	BFS-600
8"	7.90	2.07	4.46	4.00	0.87	6.75	BFS-800



Specifications

Sealing Mechanism: All metal Seal**Material Exposed to Vacuum:** 304 Stainless Steel & Copper**Standard Mounting:** Double sided VAC-U-FLANGE® (CF)**Bakeout Temperature:** 200°C**Operating Temperature:** -20 to 150°C**Pressure Range:** Atmosphere to 1×10^{-11} Torr

Huntington Bellows Sealed Viewport Shutters are manually operated rotary shutter assemblies incorporated into a double sided VAC-U-FLANGE® flange. Viewport Shutters are critical to preserving the light transmission capabilities of viewports especially in vacuum coating applications where material can become deposited on the optical substrate. The Shutter can be locked in a closed position to prevent the buildup of material on the viewport glass, then opened for viewing after the process. It can also be locked in any open position in it's swing of travel. Protect your investment in expensive or hard-to-replace viewports with **Huntington** Viewport Shutters.

ACCESS DOORS

Section 2

Dimensions: inches (mm)

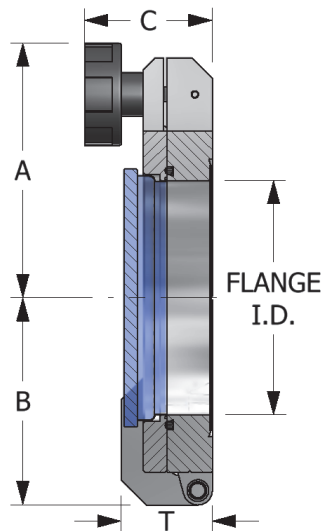
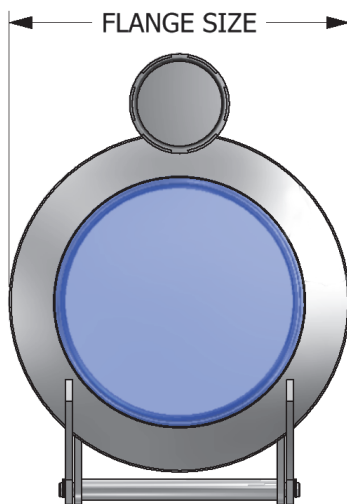
ACCESS DOORS with MOUNTING FLANGE

With VIEWPORT	FLANGE OD	VIEW DIA.	A	B	C	T	FLANGE ID	WEIGHT (lbs.)	PART NUMBER
YES	2 3/4"	1.40	2.24	2.32	2.05	1.00	1.37	2.5	AVD-275
	4 1/2"	2.69	2.92	3.25	2.07	1.36	2.37	5.5	AVD-450
	6"	3.88	4.95	4.12	2.36	1.56	3.87	10.0	AVD-600
	8"	5.38	5.93	4.81	2.54	1.74	5.83	17.0	AVD-800
	10"	5.38	7.00	5.73	2.74	1.94	7.76	24.0	AVD-1000
NO	2 3/4"	-	2.24	2.32	2.05	1.00	1.37	1.5	APD-275
	4 1/2"	-	2.92	3.25	2.07	1.36	2.37	5.0	APD-450
	6"	-	4.95	4.12	2.36	1.56	3.87	9.0	APD-600
	8"	-	5.93	4.81	2.54	1.74	5.83	15.0	APD-800
	10"	-	7.00	5.73	2.74	1.94	7.76	21.0	APD-1000

Construction: Type 7056 glass to Kovar® to 304 Stainless Steel.

Pressure Range: Atmosphere to 1×10^{-9} Torr

Bakeout Temperature:



AVD-Series
(with Viewport)



APD-Series
(without Viewport)

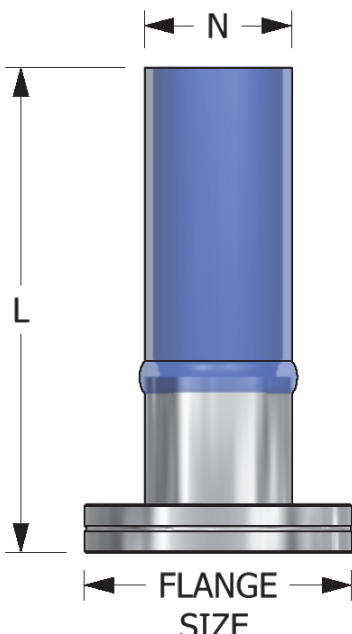


Section 2

ADAPTERS GLASS-TO-METAL

Dimensions: inches (mm)

SINGLE-ENDED GLASS-TO-METAL ADAPTERS

Material: 7740 Pyrex® Glass to 304 Stainless Steel		FLANGE OD	L	N	WEIGHT (lbs.)	PART NUMBER
	1 1/3"		4.75	0.18	0.25	VFP-018
			4.75	0.25	0.25	VFP-025
			4.75	0.31	0.25	VFP-031
			4.75	0.37	0.25	VFP-037
			4.75	0.50	0.25	VFP-050
			4.75	0.62	0.25	VFP-062
			5.25	0.75	0.25	VFP-075
	2 3/4"		4.96	1.12	0.75	VFP-112
			4.96	1.25	0.75	VFP-125
			4.96	1.37	0.75	VFP-137
			4.96	1.50	0.75	VFP-150
	3 3/8"		4.98	1.62	1.00	VFP-162
			4.98	1.75	1.00	VFP-175
	4 1/2"		5.47	2.00	1.00	VFP-200
			5.62	2.25	2.25	VFP-225
	4 5/8"		6.00	2.50	2.25	VFP-250
			5.53	2.75	2.50	VFP-275
	6"		5.53	3.00	2.50	VFP-300
			5.68	3.25	3.50	VFP-325
			5.68	3.50	3.50	VFP-350
			5.68	3.75	3.50	VFP-375
			5.68	4.00	3.50	VFP-400
	6 3/4"		5.73	5.00	4.00	VFP-500
	8"		5.75	6.00	5.00	VFP-600
	KF 16		5.25	0.75	0.50	VFP-075-SF
	KF 25		4.87	1.00	0.75	VFP-100-SF
	KF 40		5.00	1.50	1.00	VFP-150-SF
	KF 50		5.50	2.00	1.25	VFP-200-SF

Huntington glass adapters facilitate high vacuum transitions of metal to glass. Glass adapters can be used to attach special gauges and glass devices to metal systems and are also useful in glass systems requiring the use of ultra high vacuum flanges mounted to ion pumps, feedthroughs, and other accessories.

Our glass adapters come in two styles, one featuring VAC-U-FLANGE® to glass for ultra high vacuum applications and SPEED FLANGE (KF) to glass for high vacuum systems. All glass adapters feature a reliable pressure range to below 10⁻⁹ Torr and are bakeable to 450°C for VAC-U-FLANGE® and 200°C for SPEED FLANGE (KF). Available sizes range from 1/8" to 6" tubing diameters. Special adapters are available upon request, please call for quote.

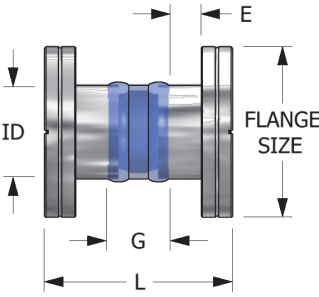
ADAPTERS GLASS-TO-METAL

Section

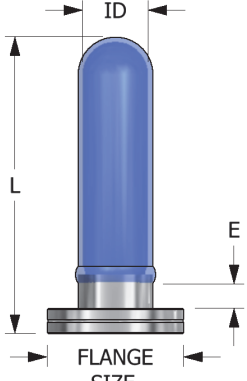
2

Dimensions: inches (mm)

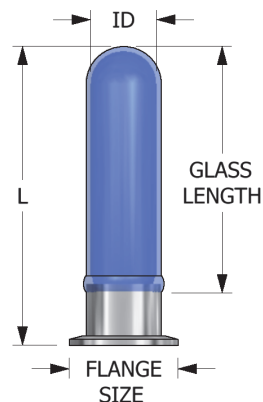
DOUBLE ENDED GLASS ADAPTERS

Material: 304 Stainless Steel Flange w/7054 Glass		FLANGE OD	L	ID	G	E	WEIGHT (lbs.)	PART NUMBER
		VAC-U-FLANGE® Series						
		1 1/3"	3.0	0.50	1.00	0.72	0.5	VFK-075-D
		2 3/4"	3.0	1.25	1.00	0.50	1.0	VFK-150-D
		SPEED SYSTEM (ISO-KF) Series						
		KF 16	3.00	0.56	1.0	1.00	0.4	VFK-075-D-SF
		KF 25	3.20	0.81	1.0	1.10	0.5	VFK-150-D-SF

SEALED DOME GLASS ADAPTERS - VAC-U-FLANGE®

Material: VAC-U-FLANGE® Flange w/7054 Glass		FLANGE OD	L	ID	E	WEIGHT (lbs.)	PART NUMBER
		1 1/3"	6.0	0.56	1.34	0.5	VFK-075-S
		2 3/4"	6.0	1.31	0.75	1.0	VFK-150-S
		3 3/8"	6.0	1.81	1.13	1.0	VFK-200-S
		4 1/2"	6.0	2.18	1.07	1.5	VFK-250-S
		4 5/8"	6.0	2.68	1.00	2.0	VFK-300-S
		6"	6.0	3.68	1.34	2.0	VFK-400-S
		6 3/4"	6.0	4.50	1.28	2.0	VFK-500-S
		8"	6.0	5.50	1.25	2.0	VFK-600-S

SEALED DOME GLASS ADAPTERS - SPEED SYSTEM

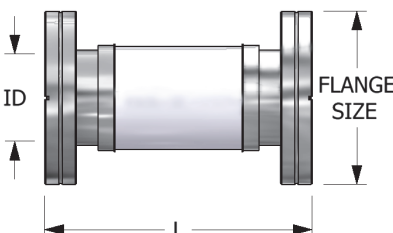
Material: SPEED SYSTEM (KF) Flange w/7054 Glass		FLANGE OD	L	ID	GLASS LENGTH	WEIGHT (lbs.)	PART NUMBER
		KF 16	6.00	0.56	4.37	0.5	VFK-075-SF
		KF 25	6.00	0.81	4.37	0.8	VFK-150-SF
		KF 40	6.00	1.31	4.37	1.0	VFK-200-SF
		KF 50	6.00	1.81	4.25	1.0	VFK-250-SF

Section 2

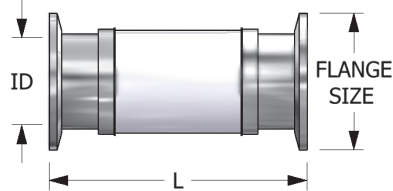
ADAPTERS CERAMIC-TO-METAL

Dimensions: inches (mm)

CERAMIC TO METAL ADAPTERS - VAC-U-FLANGE®

Material: VAC-U-FLANGE® Flange w/Ceramic	FLANGE OD	VOLTAGE RATING KVDC	ID	L	WEIGHT (lbs.)	PART NUMBER
	1 1/3"	15	0.63	3.62	1.0	VFC-075
	2 3/4"	30	1.21	4.20	2.0	VFC-150
	4 1/2"	10	2.00	4.00	2.0	VFC-250
	6"	10	2.40	4.80	2.5	VFC-300
	8"	20	6.00	5.50	3.0	VFC-600
	10"	20	7.75	5.75	5.0	VFC-800

CERAMIC TO METAL ADAPTERS - SPEED SYSTEM

Material: SPEED SYSTEM Flange w/Ceramic	FLANGE OD	VOLTAGE RATING KVDC	ID	L	WEIGHT (lbs.)	PART NUMBER
	KF 16	15	0.75	3.62	1.0	VFC-075-SF
	KF 40	30	1.25	4.22	1.5	VFC-150-SF
	KF 50	30	1.25	4.03	1.5	VFC-250-SF
	ISO 63	10	2.31	3.88	3.0	VFC-300-SF
	ISO 100	10	3.82	3.50	3.5	VFC-600-SF
	ISO 160	20	6.00	5.17	5.0	VFC-800-SF

Note: Larger ISO flanges (ISO63 to 160) are clamp style (Non-Tapered).

Huntington's Ceramic-to-Metal adapters allow for high-voltage insulation for flange to flange connections in applications requiring high and ultra high vacuum insulated mounting. Pressure range is 1×10^{-10} Torr with bakeout temperatures of 450°C for VAC-U-FLANGE® models and 200°C for SPEED SYSTEM models. The ceramic material is 90% Aluminum oxide joined to a Kovar® sleeve, which is then joined to the stainless steel flange using industry standard ultra high vacuum brazing techniques.



Huntington
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