



SHV-5 Coaxial Interface

Grounded and Floating Shield Feedthroughs

UHV Feedthrough, 112433,
Conflat® compatible flange

UHV female cable⁴ assembly,
110196, stainless steel
Accufast™ connector and
Kapton® insulated coaxial
cable.

Air-service female cable⁴
assembly, 112513,
Connector and Cable

UHV in-vacuum User-specified End
options⁴: Non-terminated

SHV-5 Coaxial Interface

The 'Safe High Voltage' connector interface is designed for low noise 50-ohm lines requiring higher voltage than is possible with a standard BNC interface. SHV-5 coaxial feedthroughs are constructed in both grounded and floating shield configurations. Floating shield types provide two concentric conductor paths: an outer metal conductor tube (shield) concentric with, and enclosing, a cylindrical center conductor pin. Both paths are electrically isolated from each other and a mounting flange. Grounded shield SHVs provide only one path that's electrically isolated from the flange; where grounded shield and flange are electrically common. Vacuum side of single-ended grounded and floating MHV feedthroughs have a 0.094 inch (2.4-mm) diameter conductor pin that mates with grounded or floating AccuFast™ connectors.

The SHV-5 coaxial feedthrough is especially useful in applications where low voltage BNC feedthroughs must coexist alongside high voltage coaxial lines. The SHV-5's unique connection interface will not allow accidental cross mating with BNCs, MHVs, or vice versa.



Features

- SHV-5 Coaxial Interface
- Grounded and Floating Shield
- Single and Double Ended configurations
- Kapton® insulated 50-Ohm cable
- High temperature rated to 250°C
- UHV compatible construction
- Conflat® and ISO KF compatible mounts
- Air service cables / connectors
- Custom solutions on request

Specifications

Electrical

Voltage ¹ , Maximum — Grounded Shield	5000 VDC
Voltage ¹ , Maximum — Floating Shield	2500 VDC
Current, Maximum @ 20°C	5 A

Material

Shell	304 Stainless Steel
Pin / Conductor	Nickel
Insulation	Alumina Ceramic
Connector, Vacuum ²	
Accufast™	Stainless Steel, PEEK
Connector, Air	Composite
Cable Insulation	Kapton® Type-F Film

Vacuum Range

UHV, Ultrahigh vacuum	1x10 ⁻¹⁰ Torr
HV, High vacuum	1x10 ⁻⁸ Torr

Temperature Range³

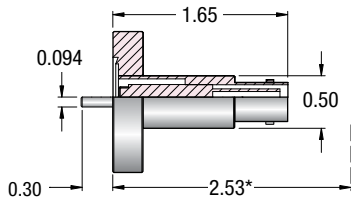
Feedthrough	-200° to 450°C
Flange Mount, Conflat®	450°C
Flange Mount, ISO	150°C
Connector / Cable, Air	165°C
Connector / Cable, Vacuum	250°C
Thermal Gradient	25°C / Minute Maximum

Notes

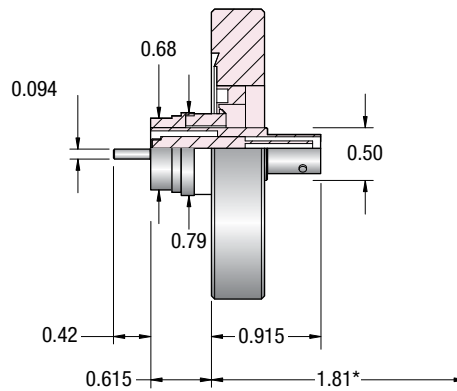
1. Electrical ratings are maximum test values, with feedthrough's vacuum side at $\leq 1 \times 10^{-4}$ Torr. Feedthroughs are intended for applications carrying high voltage.
2. PEEK is a polyether ether ketone thermoplastic.
3. Overall assembly ratings must be adjusted to that of its lowest rated component. For cryogenic service, the lowest recommended temperature is -200°C
4. Connectors and cables are not included with feedthrough and must be purchased separately.

§ Unless specified otherwise, dimensional units in all sections of this catalog are expressed in inches.

Grounded Shield — Single-Ended



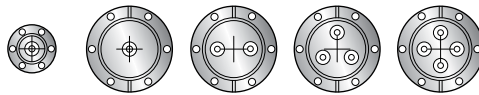
Floating Shield — Single-Ended



No. Pins	SE Circle
1	—
2	0.85
3	0.85
4	0.85

* Connector Attached

End Views showing feedthrough placements



133 CF 275 CF



112433 / Single-Ended SHV-5 (Vacuum Side)



112436 / Single-Ended SHV-5 (Vacuum Side)



112442 / Single-Ended SHV-5 (Vacuum Side)

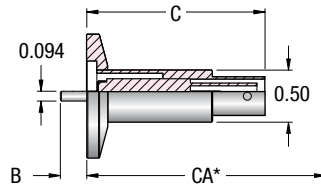
CF Flange¹ — 5 Amp / 250°C / UHV to 1x10⁻¹⁰ Torr

No. Pins	Ended	CF Flange	OD	Model Number	Part Number	Unit Price \$
Grounded Shield — 5000VDC Pin to Ground						
1	Single	133 CF	1.33	SHV5-GS-133	112432	142
1	Single	275 CF	2.73	SHV5-GS-275	112433	163
2	Single	275 CF	2.73	SHV5-GS2-275	112434	247
3	Single	275 CF	2.73	SHV5-GS3-275	112435	357
4	Single	275 CF	2.73	SHV5-GS4-275	112436	441
Floating Shield — 2500VDC Shield to Ground						
1	Single	275 CF	2.73	SHV5-FS-275	112442	216

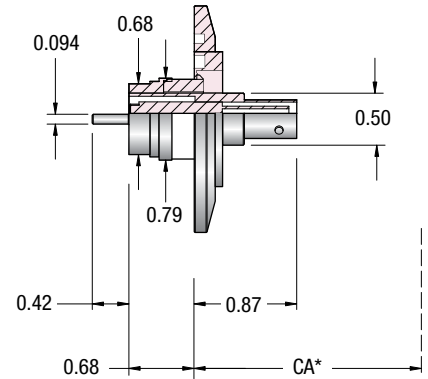
1. Compatible with Conflat[®] flanges and hardware



Grounded Shield — Single-Ended



Floating Shield — Single-Ended



112438 / Single-Ended SHV-5
(Vacuum Side)



112441 / Single-Ended SHV-5
(Vacuum Side)

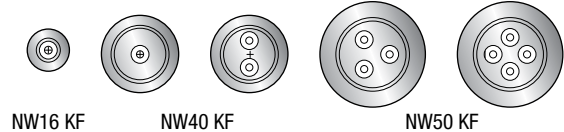


112443 / Single-Ended SHV-5
(Vacuum Side)

No. Pins	SE Circle
1	—
2	0.75
3	0.85
4	0.85

* Connector Attached

End Views showing feedthrough placements



ISO KF Flange¹ — 5 Amp / 150°C / HV to 1x10⁻⁸ Torr

No. Pins	Ended	ISO Flange	OD	B	C	CA	Model Number	Part Number	Unit Price \$
Grounded Shield — 5000VDC Pin to Ground									
1	Single	NW16 KF	1.18	0.25	1.70	2.61	SHV5-GS-K16	112437	132
1	Single	NW40 KF	2.16	0.35	1.60	2.51	SHV5-GS-K40	112438	153
2	Single	NW40 KF	2.16	0.35	1.60	2.51	SHV5-GS2-K40	112439	237
3	Single	NW50 KF	2.95	0.35	1.60	2.51	SHV5-GS3-K50	112440	347
4	Single	NW50 KF	2.95	0.35	1.60	2.51	SHV5-GS4-K50	112441	431
Floating Shield — 2500VDC Shield to Ground									
1	Single	NW40 KF	2.16	-	-	1.77	SHV5-FS-K40	112443	205

1. Compatible with ISO 2861/1 specification flanges and hardware

Ultrahigh Vacuum Cable Assemblies

The cables in the assemblies listed below consist of Accu-Glass Products' TYP6, 26 AWG, coaxial cable (part number 100720, page 99). These components are UHV compatible to 1×10^{-10} Torr.

Connector to Cable UHV cable assemblies are fitted with stainless steel Accufast™ Female connectors at one end and a non-terminated, Kapton® insulated wire at the other. The connectors mate directly to the in-vacuum side of our SHV-5 feedthrough flanges on pages 75 and 76.

Connector to User-Specified End UHV cable assemblies are fitted with stainless steel Accufast™ Female connectors at one end and a user-specified connector at the other. The connectors mate directly to the in-vacuum side of our SHV-5 feedthrough flanges on pages 75 and 76.

Cables — 250°C / UHV to 1×10^{-10} Torr

Connector Type	Figure (Below)	Wire Length	Connector Name	Model Number	Part Number	Unit Price \$
Grounded	1	19	Accufast™ 500	KAP-1CX-19AF500S	110196	175
Grounded	1	39	Accufast™ 500	KAP-1CX-39AF500S	110197	185
Floating	2	19	Accufast™ 875	KAP-1CX-19AF875S	110192	175
Floating	2	39	Accufast™ 875	KAP-1CX-39AF875S	110193	185

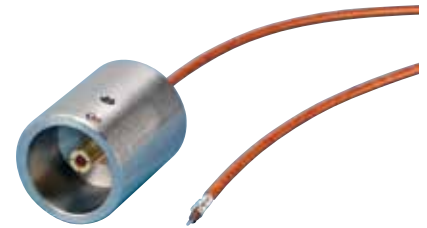
Connector to User-Specified End Options

1 contact	3	User-End / F	Append to No.	.51	170
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These are sold as additions to the above cable assemblies and are added at the factory only. Price is added to the unit price. For example, Part Number 110196.51 would have a price of \$345.



110196 / SHV-5 Grounded Shield UHV Connector



110192 / SHV-5 Floating Shield UHV Connector

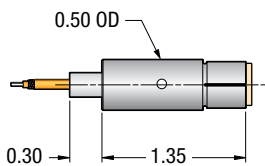


.51 / User End Female

Coaxial

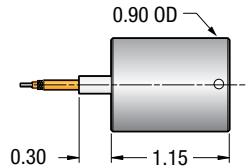
Grounded Shield

Fig. 1



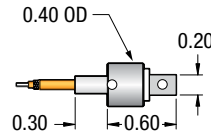
Floating Shield

Fig. 2



User-End

Fig. 3

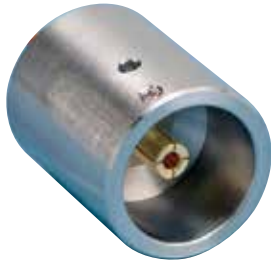


See page 74 for **Specifications**

See page 94 for **Cable Specs**



111033 / Accufast™ 500 UHV Connector



111021 / Accufast™ 875 UHV Connector

Ultrahigh Vacuum Connectors

Components in this section are sold as the most basic components. Connectors do not include wire or cable.

Connectors are designed for use with our TYP6, 26 AWG, coaxial cable (part number 100720, page 99). Use of these connectors on other coaxial cable may require modification to the crimp sleeve of the connector. Please call before ordering if using with other coaxial cable.

Accufast™ 500 and 875 connectors mate directly to the vacuum side of corresponding single-ended feedthroughs on pages 75 and 76.

Connectors — 250°C / UHV to 1×10^{-10} Torr

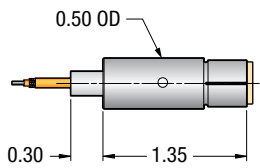
Connector Type	Figure (Below)	Connector Name	Model Number	Part Number	Unit Price \$
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Connector

Grounded	1	Accufast™ 500	AF500HV	111033	165
Floating	2	Accufast™ 875	AF875	111021	155
Generic	3	USER-END	USER-END	111022	145

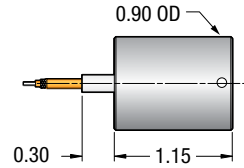
Grounded Shield

Fig. 1



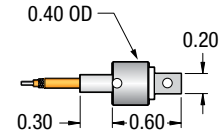
Floating Shield

Fig. 2



User-End

Fig. 3



Assembly Tools and Components

Hex Crimping Tool	1 ea.	HCT-1	111029	95
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See page 74 for **Specifications**

Air-service Cable Assemblies and Connectors

SHV-5 Female to SHV-5 Female air side cable assemblies are fitted with standard SHV-5 Male Bayonet connectors at both ends of an RG59B/U coaxial cable. The connectors mate directly with the air side of the SHV-5 feedthrough flanges on pages 75 and 76.



112513 / Air-Service SHV-5 Female Bayonet to SHV-5 Female Bayonet

Cable Assembly, Connectors, and Cable — 80°C / Air Atmosphere

Type	Gender	Length Inches	Diameter	Model Number	Part Number	Unit Price \$
Cable Assembly — SHV-5 to SHV-5						
SHV-5	F / F	48	0.25	AIR-SHV5-482SC	112513	78
Connectors — SHV-5						
SHV-5	F	—	—	AIR-SHV5-C	112514	35



112514 / Air-Service SHV-5 Female Connector