POSITRONIC™

GLOBAL Connector SOLUTIONS

LOOK FOR OUR NEW PRODUCTS!

NEW!

HERMETIC CONNECTORS

D-Sub, from Space Quality Products to Industrial Applications

Helium Leak Rate: < 5.10 $^{-9}$ mbar.l/s

Standard Connection Systems

POSITRONIC INDUSTRIES 45th ANNIVERSARY 1966 - 2011

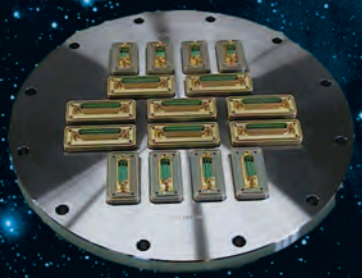
Shocks & Vibration resistant

Mixed Contact Connectors

Normal Density
High Density
Thermocouple
Power and Coaxial

THE FEEDTHROUGH SOLUTIONS

Custom Design



Catalog F-001 Rev. D

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Mission Statement

"To utilize product flexibility and application assistance to present interconnect solutions which represent value to customers worldwide."

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG® and VITA.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques.**
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, C.UL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 369,000.

Support

- **Quality Systems:** Select locations qualified to ISO9001:2000, ISO14001, AS9100, MIL-STD-790 and customer "dock to stock" programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements.**
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs.**
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Regional Headquarters

Springfield, MO

Auch, France

Singapore

Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code) FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

1) ±0.001 inches [0.03 mm] for male contact mating diameters.
2) ±0.003 inches [0.08 mm] for contact termination diameters.
3) ±0.005 inches [0.13 mm] for all other diameters.
4) ±0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

This catalog should be accompanied by copies of Positronic Industries connector catalogs as pictured below.

Space Application
D-Subminiature Connectors

Combo-D
D-Subminiature Connectors with Mixed Contact Combinations

Front Runner Series
Circular Connectors

Catalog of Industrial and Military application
D-Subminiature Connectors

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

Positronic Industries
www.connectpositronic.com

Table of Contents

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

Positronic Industries
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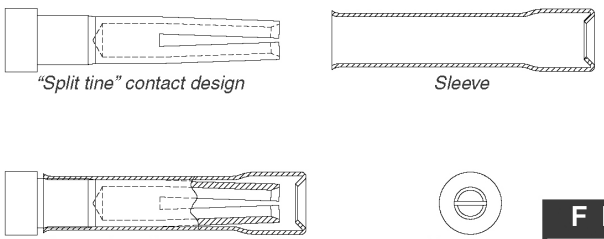
What Makes Positronic's New "PosiBand®" Contact Interface a Significant Improvement?

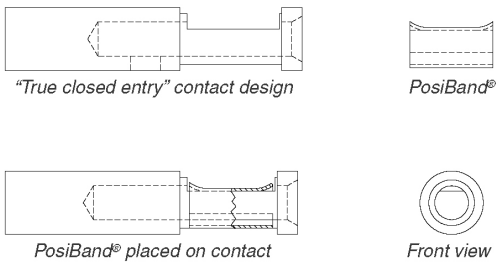
High reliability connectors utilize female **closed entry contacts** that provide an unbroken ring of solid material at the face of the contact. The closed entry feature is **crucial in preventing damage** to female contacts used in harsh environments, repeated mating cycles, blind mate applications and applications requiring highest reliability.

FIGURE 1



The most common **closed entry design** utilized by connector manufacturers is a split tine and sleeve concept. **See figure 1.** With this design, both the mechanical forces and electrical interface are provided only at the tip of the female contact.

FIGURE 2



Positronic's new **PosiBand technology** takes a unique approach to closed entry female contacts. **PosiBand** contacts utilize a two-piece contact design. **See figure 2.** Each piece serves a separate function, providing a more mechanically robust contact and more consistent electrical performance.

The main body of the **PosiBand** contact provides a true closed entry opening to enhance robustness. The **PosiBand** spring clip provides normal force on the male contact. Consistent electrical performance is supported through a larger area of contact interface between the male and female contact along the entire "floor" of the contact body. **PosiBand** contacts are QPL listed under **SAE AS39029** and qualified under **GSFC S-311-P4**.

continued on next page . . .

High Performance D-sub

NEW!

GENERAL INFORMATION

Positronic Industries
connectpositronic.com

continued from previous page . . .

The PosiBand® contact system has many advantages over the legacy split tine design.

- ✗ **PosiBand** is more robust than the split tine contact, which can be pried open in harsh environments, resulting in reduced normal force and degradation of electrical performance.
- ✗ **PosiBand** has greater surface area at the male and female contact interface, resulting in more consistent electrical performance.
- ✗ **PosiBand** has lower average insertion forces, resulting in greater ease in mating, especially in larger high density connectors. The average lower insertion force is accomplished while meeting or exceeding performance requirements.
- ✗ The **PosiBand's** contact body does not require annealing of the crimp barrels, as does the split tine design. This eliminates concern of unintentionally heat-treating the mating end of the contact, which can cause electrical failure.
- ✗ **PosiBand** is qualified under **SAE AS39029** specification. **PosiBand** is also qualified under **GSFC S-311-P4/08 Rev C** and **GSFC S-311-P4/10 Rev C**.

For more details about the ***advantages of the PosiBand®*** system, please view the detailed white paper at ***www.connectpositronic.com/content/37/*** or visit our web site at ***www.connectpositronic.com.***

Authentic POSITRONIC PosiBand
These contacts utilize authentic Positronic® PosiBand® technology.

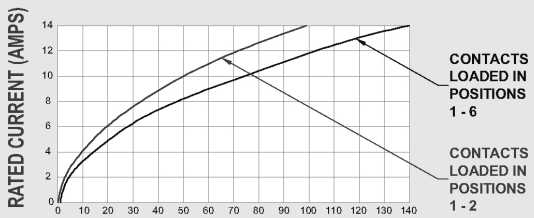
TEMPERATURE RISE CURVES

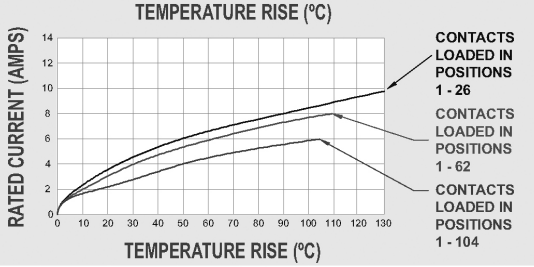
Test conducted in accordance with UL1977.

Size 22 PosiBand Contacts

Initial Contact Resistance: 0.005 ohms, maximum.

Curve developed using High Density D-subminiature connectors loaded with size 22 crimp contacts terminated to size 22 AWG wire.

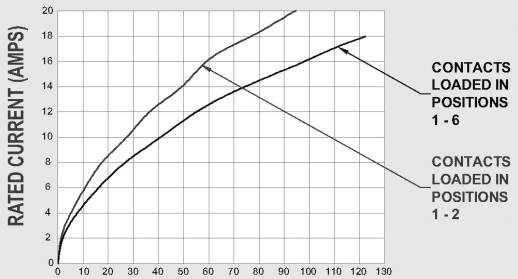


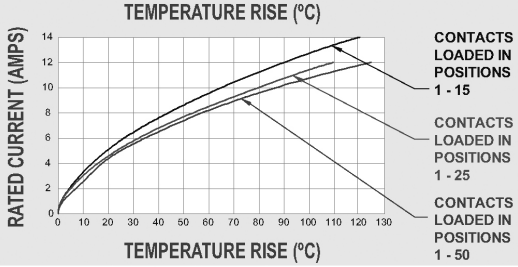


Size 20 PosiBand Contacts

Initial Contact Resistance: 0.004 ohms, maximum.

Curve developed using Standard Density D-subminiature connectors loaded with size 20 crimp contacts terminated to size 20 AWG wire.





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HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

Positronic Industries
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XAVAC®

XAVAC® Series Connectors are D-Subminiature feedthroughs for SPACE or INDUSTRIAL vacuum applications.
Both sides contain four threaded mounting holes, an o-ring groove and fixed female jackscrews. These redundant features allow either side of the connector to be mounted towards the vacuum, giving the customer the ultimate in flexibility.
The type of contacts is according to the customer request : with normal density insulators 9, 15, 25, 37, and 50 contacts (AWG20): Male/Female, Male/Male, or Female/Female. With high density insulators: 15, 26, 44, 62, 78 and 104 contacts (AWG22): Male/Female. With mixed contact combinations (Power, Coaxial, and Signal contacts): Male/Female.

All XAVAC® Series connectors are 100 % leak tested after fabrication.
In addition to the standard options, Positronic can supply XAVAC® connectors as board mount varieties or with flying leads.

XAVAC® series connectors utilize precision machined contacts for strength and durability. The materials and finishes, as well as the technical characteristics of the XAVAC® series connectors conform to MIL-DTL-24308, Goddard and the SPACE-D32 specifications.

MATERIALS AND FINISHES:

Insulator:	Glass-filled DAP per ASTM-D-5948 or polyester glass-filled per MIL-M-24519, UL94V0, ASTM E-595, NASA-RP-1124.
Contacts:	Precision machined copper alloy.
Posiband spring clip:	BeCu (Copper alloy)
Contact plating:	0,000050 inch (1,25 microns) gold over copper plate.
Shells:	Brass with 0,000050 inch (1,25 microns) gold over copper plate or stainless steel.
Housing:	Aluminium alloy, golden brown conversion coating.
O-ring:	Viton (fluorocarbon). Other material per request.

MECHANICAL CHARACTERISTICS :

Fixed Contacts:	Size 8 Contact: 0,142 inch (3,61mm) diameter. Female contact: Features large surface area (L.S.A.) closed entry design utilizing BeCu mechanical retention member.
	Size 20 Contact: 0,040 inch (1,02mm) diameter. Female Posiband Contact: Closed entry design.
	Size 22 Contact: 0,030 inch (0,76mm) diameter. Female Posiband Contact: Closed entry design.

CONTACT RETENTION in insert:	9 lbs. (40 N).
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells.
Mechanical Operations:	500 operations, minimum, per IEC 512-5.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-40 to +125℃. The temperature range can be expended under certain conditions. Consult factory.

Helium Leak Rate < 5-10^{-9}mbar.l/s under a vacuum of 1.5x10^{-2} mbar
Outgassing non-metallic material: Total Mass Loss – **TML < 1 %**
Collected Volatile Condensable Materials – **CVCM < 0,1 %**

ELECTRICAL CHARACTERISTICS AT SEA LEVEL
SIGNAL CONTACTS

Contact current rating:	14 A nominal, size 20 10 A nominal, size 22
Initial Contact Resistance:	0,005 ohms maximum
Proof Voltage:	1000 V r.m.s.

POWER CONTACTS

Contact Current Rating:	10, 15, 20, 30 and 40 amperes nominal
Initial Contact Resistance:	0.0005 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SHIELDED CONTACTS

Initial Contact Resistance:	0.008 ohms maximum
Nominal Impedance:	50 ohms.
Insertion Loss:	-0.46 dB at 1 GHz -1.5 dB at 2 GHz
VSWR:	1.15 average at 1 GHz 1.56 average at 2 GHz

Above values measured using frequency domain techniques.

HIGH VOLTAGE CONTACTS

Flash over Voltage:	3600 V r.m.s.
Proof Voltage:	2700 V r.m.s.
Initial Contact Resistance:	0.008 ohms maximum.

CONNECTOR

Insulator Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 inch (1.0mm) minimum.
Working Voltage:	300 V r.m.s.
Residual Magnetism for Space Flight Versions:	20 Gamma maximum.

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

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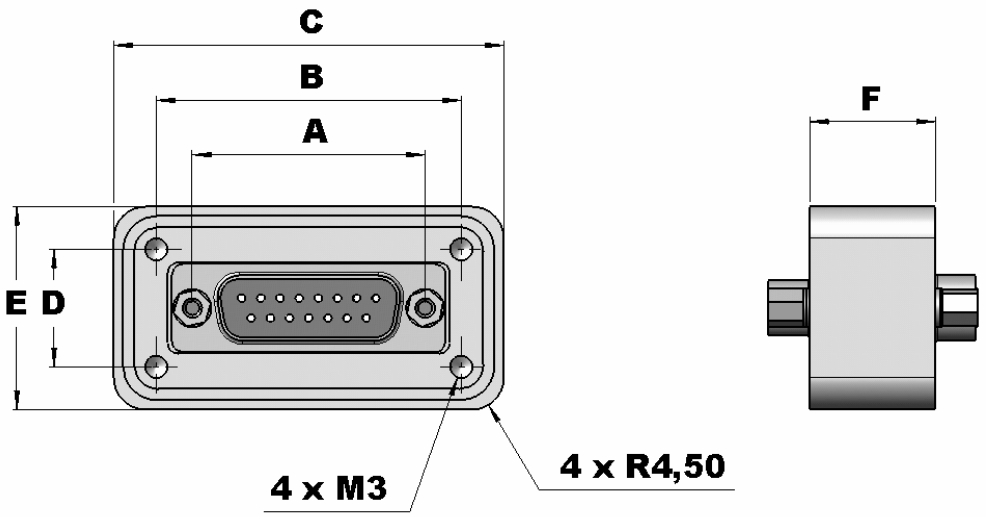
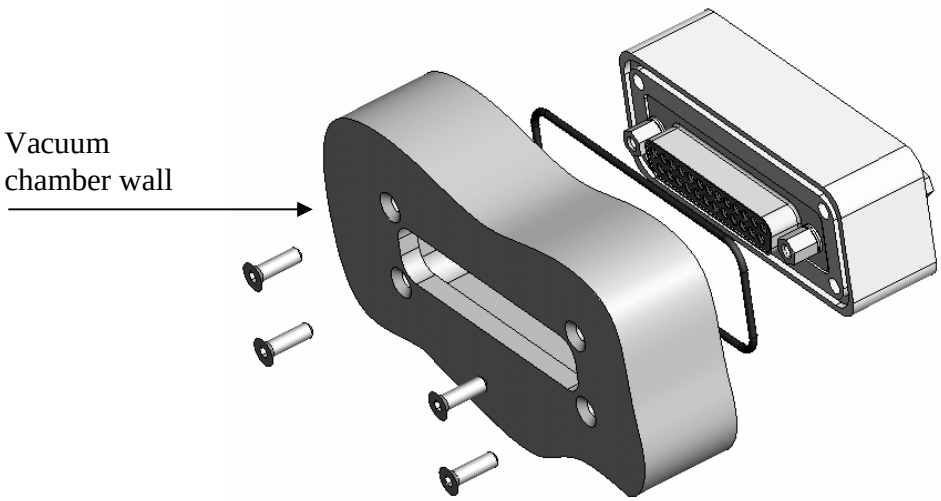
XAVAC® DIMENSIONS



	A	B	C	D	E	F	
						Type 0-1*	Type 2-3-4*
SHELL SIZE 1	24,99	34,29	46,37	16,00	28,08	18	24
SHELL SIZE 2	33,32	43,64	55,79	16,76	28,92	18	24
SHELL SIZE 3	47,04	56,36	67,42	16,02	27,08	18	24
SHELL SIZE 4	63,50	73,46	85,38	16,90	28,82	18	24
SHELL SIZE 5	61,11	71,28	82,99	19,68	31,40	18	24
SHELL SIZE 6	63,50	73,26	84,38	20,88	32,00	18	24

** See ordering information : STEP 5 – Type of contacts*

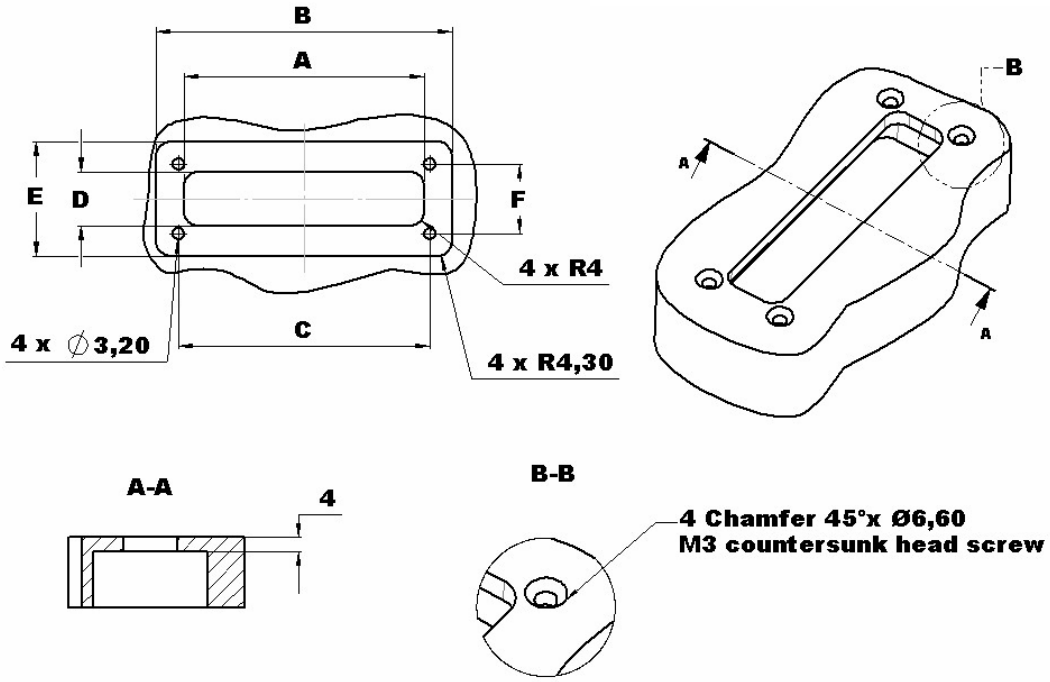
XAVAC® MOUNTING



All dimensions are in mm.
All dimensions are subject to change.

XAVAC® PANEL CUT-OUT INFORMATION

The depths are identical for all XAVAC® sizes



	A	B	C	D	E	F
SHELL SIZE 1	32,00	47,40	34,29	12,50	29,10	16,00
SHELL SIZE 2	40,30	56,80	43,64	12,50	29,90	16,76
SHELL SIZE 3	54,00	68,40	56,36	12,50	28,10	16,02
SHELL SIZE 4	70,50	86,40	73,46	12,50	29,80	16,90
SHELL SIZE 5	68,10	84,00	71,28	15,25	32,40	19,68
SHELL SIZE 6	70,50	85,40	73,26	16,80	33,00	20,88

All dimensions are in mm.
All dimensions are subject to change.

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

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ORDERING INFORMATION – CODE NUMBERING SYSTEMS

STEP	1	2	3	4	5	-	6
	XAVAC	15	M/S	G	.0		

STEP 1 – BASIC SERIES
XAVAC series

STEP 2 – CONNECTOR VARIANTS
Normal density
9-15-25-37-50
High density
15-26-44-62-78-104
Mixed combinations (Consult Combo-D catalog)
5W1 up to 46W4

STEP 3 – CONNECTOR GENDER
M/S : Male/Female Posiband
M/M : Male/Male
Not available for high density / mixed combinations
S/S : Female Posiband/Female Posiband
Not available for high density / mixed combinations

STEP 4 – TYPE OF APPLICATIONS
G : Gold for Space version
D : Gold and Dimpled for Space version
S : Stainless-steel for Space version
Residual magnetism from 20 to 2000 Gamma
I : Stainless-steel for Industrial version

STEP 5 – TYPE OF CONTACTS
0 : Normal density
1 : High density
2 : Power and/or mixed combinations
3 : Coax. and/or mixed combinations
4 : High voltage
5* : Thermocouple contact (only normal density)

STEP 6 – SPECIAL OPTIONS
Consult Sales Department

5* : Thermocouple contact

	Material
5 K	Chromel ® (+) Alumel ® (-)
5 T	Copper (+) Constantan (-)
5 J**	Iron (+) Constantan (-)
5E**	Chromel ® (+) Constantan (-)

Position of thermocouple contacts:

- The first cavity is always loaded.

- Even cavities for negative contacts (-)

- Odd cavities for positive contacts (+)

**** Consult sales department**

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

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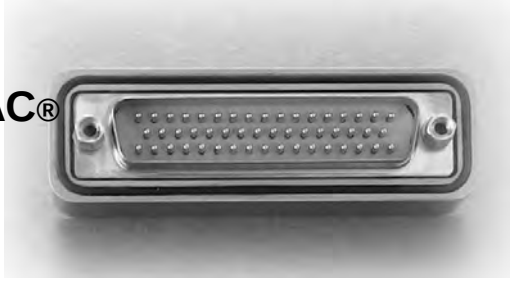
SAVAC®



SAVAC® Series Connectors are D-Subminiature feedthroughs for SPACE or INDUSTRIAL vacuum applications.
Both sides contain two threaded mounting holes (female jackscrews) and a o-ring groove. These redundant features allow either side of the connector to be mounted towards the vacuum, giving the customer the ultimate in flexibility.
The type of contacts is according to the customer request: with normal density insulators 9, 15, 25, 37, and 50 contacts (AWG20): Male/Female, Male/Male, or Female/Female. With high density insulators: 15, 26, 44, 62, 78 and 104 contacts (AWG22): Male/Female. With mixed contact combinations (Power, Coaxial, and Signal contacts): Male/Female.

All SAVAC® Series connectors are 100 % leak tested after fabrication. In addition to the standard options, Positronic can supply SAVAC® connectors as board mount varieties or with flying leads.

SAVAC® series connectors utilize precision machined contacts for strength and durability. The materials and finishes, as well as the technical characteristics of the SAVAC® series connectors conform to MIL-DTL-24308, Goddard, and the SPACE-D32 specifications.

MATERIALS AND FINISHES

Insulator: Glass-filled DAP per ASTM-D-5948 or polyester glass-filled per MIL-M-24519, UL94V0, ASTM E-595, NASA-RP-1124.
Contacts: Precision machined copper alloy.
Posiband spring clip: BeCu (Copper alloy)
Contact plating: 0,000050 inch (1,25 microns) gold over copper plate.
Shells: Brass with 0,000050 inch (1,25 microns) gold over copper plate or stainless steel.
Housing: Aluminium alloy, golden brown conversion coating..
O-ring: Viton (fluorocarbon). Other material per request.

MECHANICAL CHARACTERISTICS :

Fixed Contacts: Size 8 Contact: 0,142 inch (3,61mm) diameter. Female contact: Features large surface area (L.S.A.) closed entry design utilizing BeCu mechanical retention member.

Size 20 Contact: 0,040 inch (1,02mm) diameter. Female Posiband Contact: Closed entry design.

Size 22 Contact: 0,030 inch (0,76mm) diameter. Female Posiband Contact: Closed entry design.

Contact Retention in insert: 9 lbs. (40 N)
Shells: Male shells may be dimpled for EMI/ESD ground paths.
Polarization: Trapezoidally shaped shells
Mechanical Operations: 500 operations, minimum, per IEC 512-5

CLIMATIC CHARACTERISTICS

Temperature Range: -40 to +125℃. The temperature range can be expended under certain conditions. Consult the factory.
Helium Leak Rate < $5\text{-}10^{-9}$mbar.l/s under a vacuum of $1.5x10^{-2}$ mbar
Outgassing non-metallic material: Total Mass Loss – **TML < 1 %**
Collected Volatile Condensable Materials – **CVCM < 0,1 %**

ELECTRICAL CHARACTERISTICS AT SEA LEVEL

SIGNAL CONTACTS

Contact current rating: 14 A nominal, size 20
10 A nominal, size 22
Initial Contact Resistance: 0.005 ohms maximum
Proof Voltage: 1000 V r.m.s.

POWER CONTACTS

Contact Current Rating: 10, 15, 20, 30 and 40 amperes nominal
Initial Contact Resistance: 0.0005 ohms maximum
Proof Voltage: 1000 V r.m.s.

SHIELDED CONTACTS

Initial Contact Resistance: 0.008 ohms maximum
Nominal Impedance: 50 ohms
Insertion Loss: -0.46 dB at 1 GHz
-1.5 dB at 2 GHz
VSWR: 1.15 average at 1 GHz
1.56 average at 2 GHz

Above values measured using frequency domain techniques.

Proof Voltage: 1000 V r.m.s.

HIGH VOLTAGE CONTACTS

Flash over Voltage: 3600 V r.m.s.
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Initial Contact Resistance: 0.008 ohms maximum

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Insulator Resistance: 5 G ohms.
Clearance and Creepage Distance: 0.039 inch (1.0mm) minimum
Working Voltage: 300 V r.m.s.
Residual Magnetism for Space Flight Versions: 20 Gamma maximum

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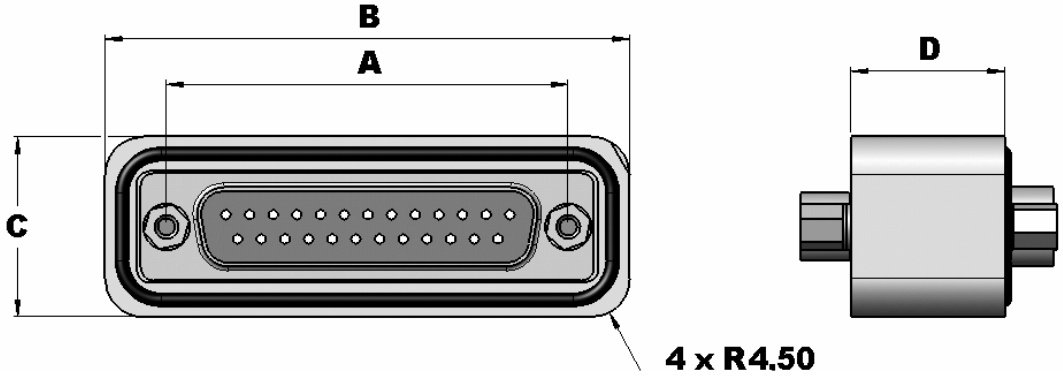
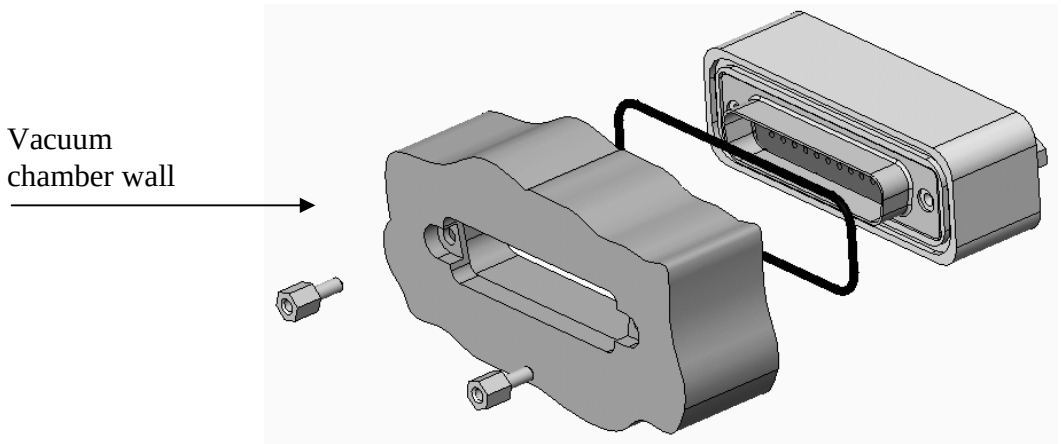
SAVAC® DIMENSIONS



	A	B	C	D	
				Type 0-1*	Type 2-3-4*
SHELL SIZE 1	24,99	39,37	21,08	18	24
SHELL SIZE 2	33,32	47,7	21,08	18	24
SHELL SIZE 3	47,04	61,42	21,08	18	24
SHELL SIZE 4	63,5	77,88	21,08	18	24
SHELL SIZE 5	61,11	75,49	23,9	18	24
SHELL SIZE 6	63,5	77,88	25,5	18	24

** See ordering information : STEP 5 – Type of contacts*

SAVAC® MOUNTING



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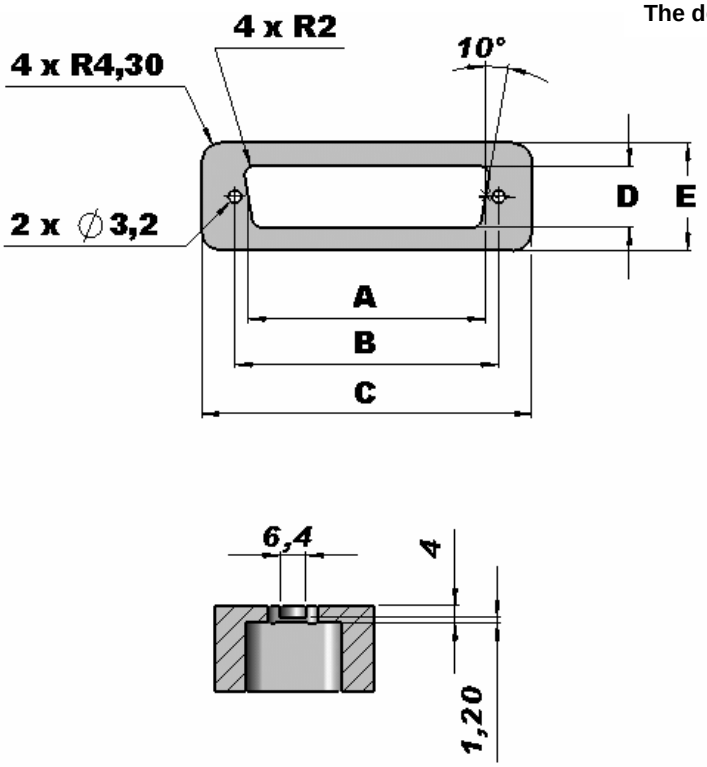

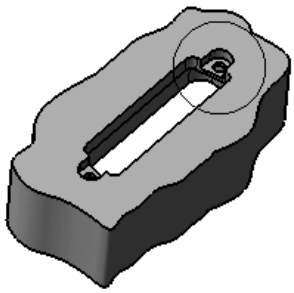

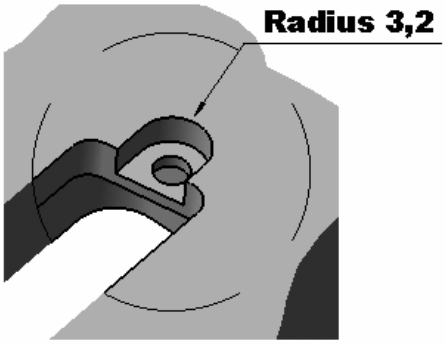

	A	B	C	D	E
SHELL SIZE 1	19,70	24,99	40,40	11,70	22,10
SHELL SIZE 2	28,10	33,32	48,70	11,70	22,10
SHELL SIZE 3	41,90	47,04	62,50	11,70	22,10
SHELL SIZE 4	58,40	63,50	78,90	11,70	22,10
SHELL SIZE 5	55,20	61,11	76,50	14,70	24,90
SHELL SIZE 6	58,40	63,50	78,90	16,00	26,50

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Mixed combinations (Consult Combo-D catalog)
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3 : Coax. and/or mixed combinations
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STEP 6 – SPECIAL OPTIONS
Consult Sales Department

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	Material
5 K	Chromel ® (+) Alumel ® (-)
5 T	Copper (+) Constantan (-)
5 J**	Iron (+) Constantan (-)
5E**	Chromel ® (+) Constantan (-)

Position of thermocouple contacts:

- The first cavity is always loaded.

- Even cavities for negative contacts (-)

- Odd cavities for positive contacts (+)

**** Consult sales department**

THERMOCOUPLE CONNECTORS

D-Sub connectors with thermocouple crimp contacts.

D-Sub feed-through equipped with thermo-couple contacts and the counterparts with thermocouple crimp contacts.

The thermocouple connectors are available in D-Sub connectors version and also in hermetic version (D-Sub feed-through).

D-Sub Connector
See Positronic D-Sub connectors catalog (Standard and Space Versions).

Thermocouple crimp contacts
- Dimensional conformity to SAE AS39029
- Precision machined contacts
- Size 20 contacts
- Thermocouple alloy :

	Female and male crimp contacts Part-Number			
	Material	**Male**	**Female**	**Color code**
Type K	Chromel® (+)	MC6020DCH	FC6020D2CH	White
	Alumel® (-)	MC6020DAL	FC6020D2AL	Green
Type T	Copper (+)	MC6020DCU	FC6020D2CU	Red
	Constantan (-)	MC6020DCO	FC6020D2CO	Yellow
Type J*	Iron (+)	MC6020DIR	FC6020D2IR	Black
	Constantan (-)	MC6020DCO	FC6020D2CO	Yellow
Type E*	Chromel® (+)	MC6020DCH	FC6020D2CH	White
	Constantan (-)	MC6020DCO	FC6020D2CO	Yellow

** Consult sales department*

D-Sub feed-through
- Conform to MIL-DTL-24308E
- Size 20 contacts
- Type of contacts : Male/Female
- Type of contacts : Type K "Chromel® (+) / Alumel® (-)
  Type T "Copper (+) / Constantan (-)
  Type J* "Iron (+) / Constantan (-)
  Type E* "Chromel® (+) / Constantan (-)

** Consult sales department*

Position of thermocouple contacts:
- The first cavity is always loaded.
- Even cavities for negative contacts (-)
- Odd cavities for positive contacts (+)

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

Positronic Industries
www.connectpositronic.com

HIVAC®

HIVAC® Series Connectors are feedthroughs equipped with D-Subminiature Adapter Connectors for SPACE or INDUSTRIAL vacuum applications.
The HIVAC® Connector configuration requires three separate units to function properly. The center unit is the feedthrough. This feedthrough requires two adapter units, one for the atmospheric side and one for the vacuum side.
Both sides of the feedthrough contain four threaded mounting holes and an o-ring groove. These redundant features allow either side of the connector to be mounted towards the vacuum, giving the customer the ultimate in flexibility.
The feedthrough has always Female/Female contacts.
The contact type of Adapter Connector is always as male next to the feedthrough and the other sides are according to the Customer request, Male/Male or Male/Female for the normal density, and for the high density it is systematically Male/Female.
A feedthrough has 5 types of insulators: 37 or 50 contacts for normal D and 44, 62 and 104 contacts for high D.

An Adapter Connector allows several combinations with a feedthrough.
The advantage of this system is that it allows the user the flexibility to purchase a single feedthrough and use it with a variety of adapters.

HIVAC® series connectors utilize precision machined contacts for strength and durability. The materials and finishes, as well as the technical characteristics of the HIVAC® series connectors, conform to MIL-DTL-24308, Goddard and SPACE-D32 specifications.
All HIVAC® Series connectors are 100 % leak tested after fabrication.

MATERIALS AND FINISHES

Insulator: Glass-filled DAP per ASTM-D-5948 or polyester glass-filled per MIL-M-24519, UL94V0, ASTM E-595, NASA-RP-1124.
Contacts: Precision machined copper alloy.
Posiband spring clip: BeCu (Copper alloy)
Contact plating: 0,000050 inch (1,25 microns) gold over copper plate.
Shells: Brass with 0,000050 inch (1,25 microns) gold over copper plate or stainless steel.
Housing: Aluminium alloy, golden brown conversion coating.
O-ring: Viton (fluorocarbon). Other material per request.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL

Contact current rating: 7,5 A nominal, size 20
5 A nominal, size 22
Initial Contact Resistance: 0.005 ohms maximum
Proof Voltage: 1000 V r.m.s.
Insulator Resistance : 5 G ohms
Clearance and Creepage Distance: 0.039 inch (1,0 mm) minimum
Working Voltage: 300 V r.m.s.
Residual Magnetism for Space Flight Versions: 20 Gamma maximum.

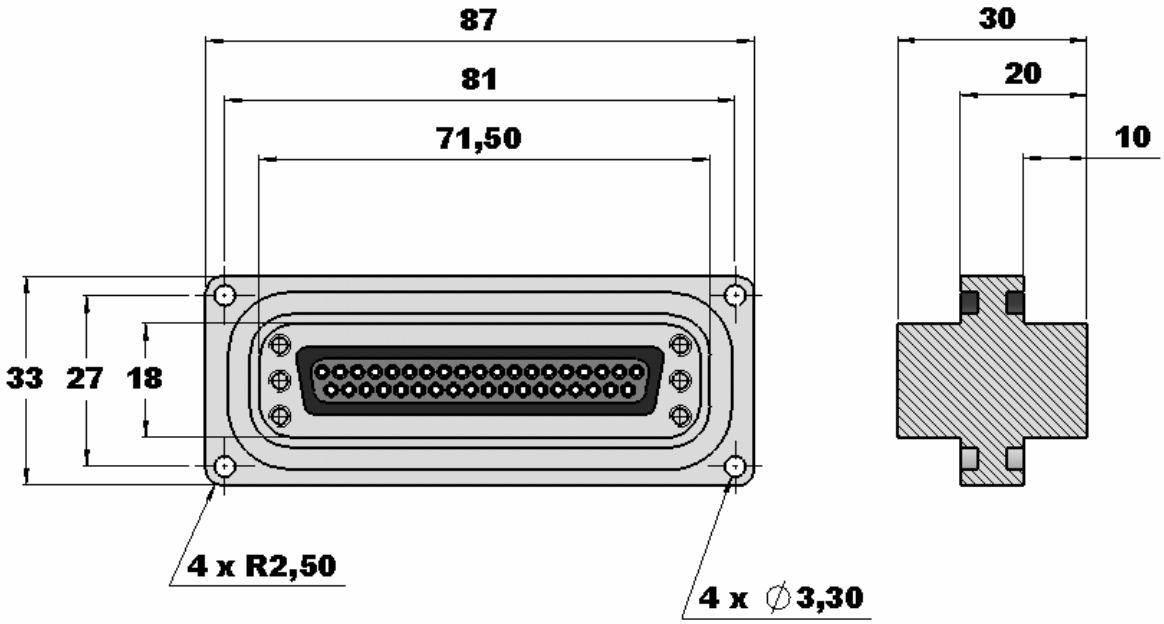
MECHANICAL CHARACTERISTICS :

Fixed Contacts: Size 20 Contact: 0,040 inch (1,02mm) diameter. Female Posiband contact: Closed entry design.
Size 22 Contact: 0,030 inch (0,76mm) diameter. Female Posiband Contact: Closed entry design.
Contact Adapter: Male to female
Contact Retention in insert: 9 lbs. (40 N)
Shells: Male shells may be dimpled for EMI/ESD ground paths.
Polarization: Trapezoidally shaped shells
Mechanical Operations: 500 operations, minimum, per IEC 512-5

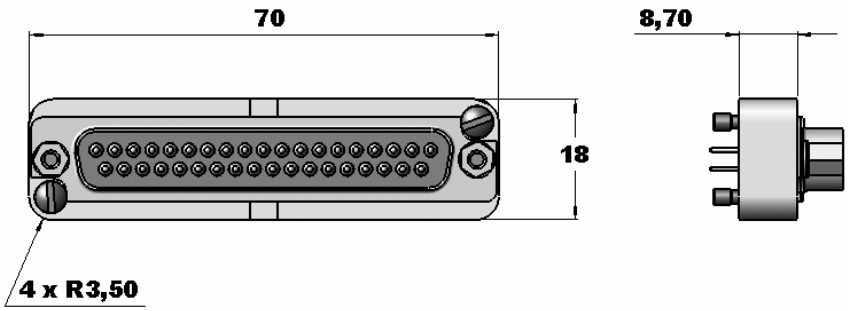
CLIMATIC CHARACTERISTICS

Temperature Range: -40 to +125°C. The temperature range can be expended under certain conditions. Consult the factory.
Helium Leak Rate < 5-10^{-9}mbar.l/s under a vacuum of 1.5x10^{-2} mbar
Outgassing non-metallic material: Total Mass Loss **– TML < 1 %**
Collected Volatile Condensable Materials – **CVCM < 0,1 %**

HIVAC® FEEDTHROUGH DIMENSIONS

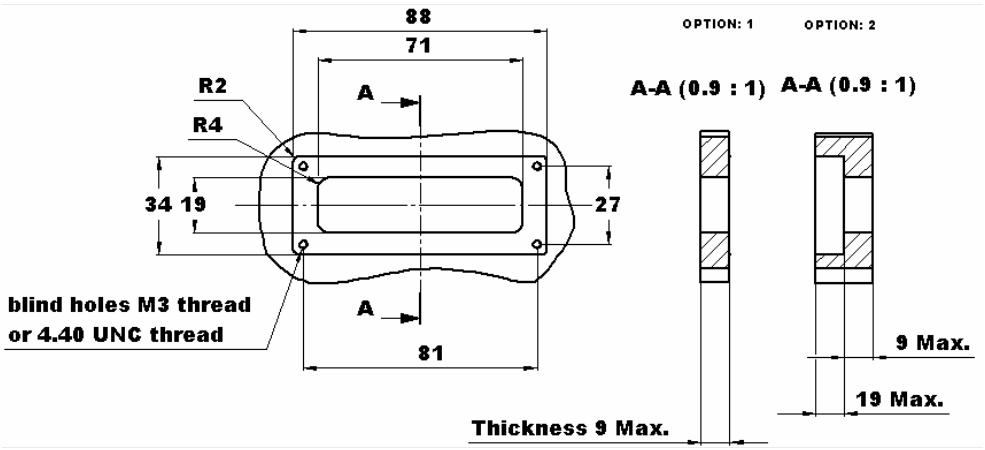


HIVAC® ADAPTER DIMENSIONS

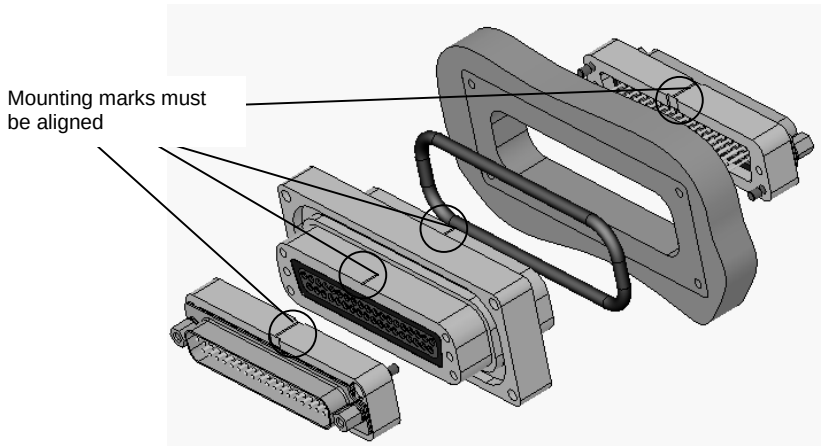


All dimensions are in mm.
All dimensions are subject to change.

HIVAC® FEEDTHROUGH PANEL CUTOUT INFORMATION



HIVAC® FEEDTHROUGH AND HIVAC ADAPTER MOUNTING



All dimensions are in mm.
All dimensions are subject to change.

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

Positronic Industries
www.connectpositronic.com

ORDERING INFORMATION – CODE NUMBERING SYSTEMS

FEEDTHROUGH PART-NUMBERS

STEP	1	2	3	-	4
	HIVAC	37	.0		

STEP 1 – BASIC SERIES
HIVAC FEEDTHROUGH

STEP 2 – CONNECTOR VARIANTS
Normal density
37-50
High density
44-62-104

STEP 3 – TYPE OF CONTACTS LAYOUTS
0 : Normal density
1 : High density

STEP 4 – SPECIAL OPTIONS
Consult Sales Department

ADAPTER PART-NUMBERS

STEP	1	2	3	4	5	-	6
	HIVAC	37	25	M	G		

STEP 1 – BASIC SERIES
HIVAC ADAPTER

STEP 2 – HIVAC FEED-THROUGH
Normal density
37-50
High density
44-62-104

STEP 3 – HIVAC ADAPTER CONTACT VARIANTS
Normal density with 37 variant
9-2X9-15-25-37
Normal density with 50 variant
9-2X9-15-25-50
High density with 44 variant
15-26-44
High density with 62 variant
62
High density with 104 variant
78-104

STEP 4 – ADAPTER GENDER
M : Male contact

S : Female Posiband

MM-SS: Use only with 37.2X9* and 50.2X9* Hivac Adapter

(see example page 17)

MS : Use only with 37.2X9* Hivac Adapter

For normal density : 2 Male Hivac Adapters or 1 Male Hivac Adapter with 1 Female Hivac Adapter

For high density : 1 Male Hivac Adapter with 1 Female Hivac Adapter

STEP 5 – TYPE OF APPLICATIONS
G : Gold for Space version
D : Gold and Dimpled for Space Version
S : Stainless-steel for Space version
Residual magnetism from 20 to 2000 Gamma

STEP 6 – SPECIAL OPTIONS
Consult Sales Department

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

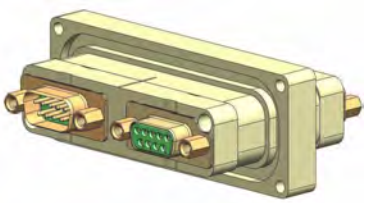
Positronic Industries
www.connectpositronic.com

RECAPITULATIVE PART-NUMBER
With all adapter variants

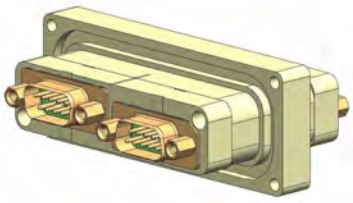
HIVAC Adapter	←	HIVAC Feedthrough	→	HIVAC Adapter	HIVAC Adapter	←	HIVAC Feedthrough	→	HIVAC Adapter
HIVAC 37.9M*		**HIVAC 37.0**		HIVAC 37.9S*	HIVAC 50.9M*		**HIVAC 50.0**		HIVAC 50.9S*
HIVAC 37.9M*				HIVAC 37.9M*	HIVAC 50.9M*				HIVAC 50.9M*
HIVAC 37.9S*				HIVAC 37.9S*	HIVAC 50.9S*				HIVAC 50.9S*
					HIVAC50.2X9MM*				HIVAC50.2X9SS*
HIVAC37.2X9MS*				HIVAC 37.2X9SM*	HIVAC 50.15M*				HIVAC 50.15S*
HIVAC37.9X2MS*				HIVAC 37.2X9MS*	HIVAC 50.15M*				HIVAC 50.15M*
HIVAC37.2X9MM*				HIVAC 37.2X9SS*	HIVAC 50.15S*				HIVAC 50.15S*
HIVAC37.2X9MM*				HIVAC 37.2X9MM*	HIVAC 50.25M*				HIVAC 50.25S*
HIVAC37.2X9MM*				HIVAC 37.2X9MS*	HIVAC 50.25M*				HIVAC 50.25M*
HIVAC37.2X9MM*				HIVAC 37.2X9SM*	HIVAC 50.25S*				HIVAC 50.25S*
HIVAC 37.2X9SS*				HIVAC 37.2X9SS*	HIVAC 50.50M*				HIVAC 50.50S*
HIVAC 37.2X9SS*				HIVAC 37.2X9MS*	HIVAC 50.50M*				HIVAC 50.50M*
HIVAC 37.2X9SS*				HIVAC 37.2X9SM*	HIVAC 50.50S*				HIVAC 50.50S*
HIVAC 37.15M*				HIVAC 37.15S*	HIVAC 44.15M*		**HIVAC 44.1**		HIVAC 44.15S*
HIVAC 37.15M*				HIVAC 37.15M*	HIVAC 44.26M*				HIVAC 44.26S*
HIVAC 37.15S*				HIVAC 37.15S*	HIVAC 44.44M*				HIVAC 44.44MS*
HIVAC 37.25M*				HIVAC 37.25S*					
HIVAC 37.25M*				HIVAC 37.25M*	HIVAC 62.62M*		**HIVAC 62.1**		HIVAC 62.62S*
HIVAC 37.25S*				HIVAC 37.25S*					
HIVAC 37.37M*				HIVAC 37.37S*	HIVAC 104.78M*		**HIVAC 104.1**		HIVAC 104.78S*
HIVAC 37.37M*				HIVAC 37.37M*	HIVAC 44.15M*				HIVAC 44.15S*
HIVAC 37.37S*				HIVAC 37.37S*	HIVAC 104.104M*				HIVAC104.104S*

* Type of application: G, D or S (See Code Numbering System).
** For high density: 1 Male HIVAC adapter with 1 Female HIVAC adapter.

Example: HIVAC 37.2x9MS



Example: HIVAC 50.2x9MM



HERMETIC CIRCULAR CONNECTOR FOR INDUSTRIAL VACUUM APPLICATIONS

Positronic Industries
www.connectpositronic.com

CIVAC®

Without flange

With flange

TECHNICAL CHARACTERISTICS

MATERIAL AND FINISHES

Insulator: Glass-filled DAP, type SDG-F, black color, UL 94V0.

Contacts: Precision machined high tensile copper alloy.

Contact plating: 0,00030 inch (0,8 microns) gold plate over nickel plate

Shells:
- Aluminium alloy, golden brown conversion coating
- Stainless steel

Flange:
- Aluminium Alloy
- Stainless steel

O-ring: Viton (fluorocarbone). Other material per request.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL

Contact current rating:
25A nominal, size 12
13A nominal, size 16
7,5A nominal, size 20
5 A nominal, size 20

Initial contact resistance:
0,003 ohms max., size 12
0,003 ohms max., size 16
0,007 ohms max., size 20
0,012 ohms max., size 22

Insulator resistance: 5 G ohms

Clearance and Creepage: See Front Runner Series Product catalog

Working voltage: See Front Runner Series Product catalog

EMI/RFI shielding characteristics:

Surface continuity: < 0,1 ohm

Attenuation: 70-80dB at most frequencies

MECHANICAL CHARACTERISTICS

Fixed contacts:
Size 12 contact: 0,094 inch (2,4mm) diameter
Size 16 contact: 0,063 inch (1,6mm) diameter
Size 20 contact: 0,040 inch (1,02mm) diameter
Size 22 contact: 0,030 inch (0,76mm) diameter
Female contacts: closed entry design for highest reliability

Contact retention in insulator:
Size 12: 20 lbs (89 N)
Size 16: 20 lbs (89 N)
Size 20: 10 lbs (44 N)
Size 22: 6 lbs (27 N)

Sequential contact mating:

Systems: One and two level systems. Consult the factory for ordering information.

Polarization: Shell is with integral polarization system.

Coupling system:
Size 11 shell: M19 coupling nut
Size 19 shell: M32 coupling nut

Mechanical operators:

500 coupling

CLIMATIC CHARACTERISTICS:

Temperature range: -40 to +125°C-40 to +125°C. The temperature range can be expended under certain conditions. Consult the factory.

Helium Leak Rate < 5-10^{-9}mbar.l/s under a vacuum of 1.5x10^{-2} mbar

Outgassing non-metallic material : Total Mass Loss – **TML < 1 %**
Collected Volatile Condensable Materials – **CVCM < 0,1 %**

HERMETIC CIRCULAR CONNECTORS FOR INDUSTRIAL VACUUM APPLICATIONS

Positronic Industries
www.connectpositronic.com

ORDERING INFORMATION – CODE NUMBERING SYSTEMS

STEP	1	2	3	4	5	6	7
	CIVAC	11	M/M	316	M	K63A	

STEP 1
CIVAC – Circular Vacuum Connector

STEP 2 – HOUSING SIZE
11 – Size 11 Housing
19 – Size 19 Housing

STEP 3 – GENDER
First letter is mounted outside Vacuum equipment
M/M Male/Male
F/F Female/Female
M/F Male/Female
F/M Female/Male

STEP 4 – SIZE CONTACT ARRANGEMENT*

Size 11 Housing	Size 19 Housing
316 – 3 size 16	312 – 3 size 12
420 – 4 size 20	512 – 5 size 12
520 – 5 size 20	712 – 7 size 12
722 – 7 size 22	716 – 7 size 16
822 – 8 size 22	916 – 9 size 16
922 – 9 size 22	920 – 9 size 20
	1220 – 12 size 20
	1822 – 18 size 22
	1920 – 19 size 20
	2922 – 29 size 22

STEP 5 – SERVICE CLASS
O – Standard
M – EMI/RFI Shielded

STEP 6 – FLANGE TYPE
0A(S) ① – without flange

A = Shell in aluminium steel
S = Shell in Stainless steel
① Consult the factory for panel thickness

K63A(S)② - with flange
F63A(S)② - with flange

K63 : Flange DN63 - ISO-K equipped with one size 11 or one size 19 connector.
F63 : Flange DN63 - ISO-F equipped with one size 11 or one size 19 connector.

A : Flange in aluminium alloy
S : Flange in stainless steel

② Consult the factory for another flange dimensions

STEP 7
Consult the factory

See Front Runner Series Product Catalog for detailed dimensional information.

HERMETIC CONNECTORS / FEEDTHROUGH
CUSTOM DESIGN

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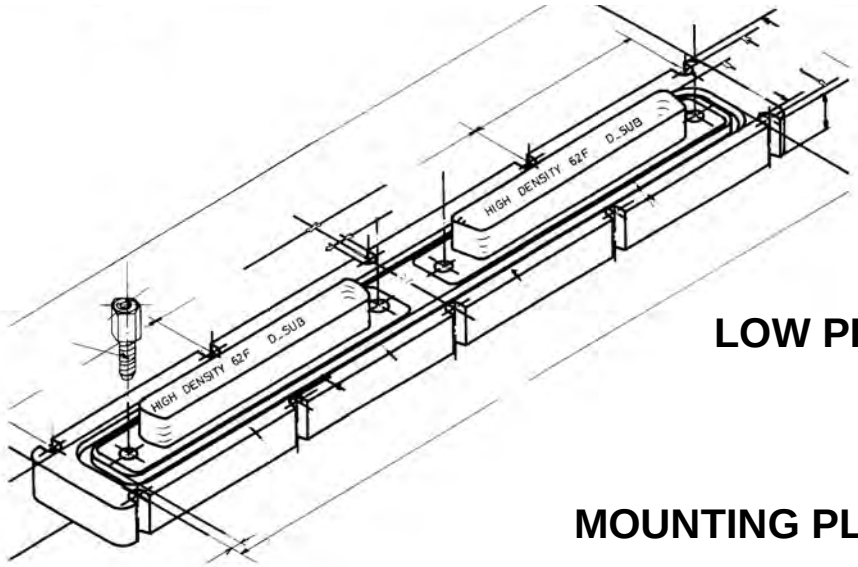


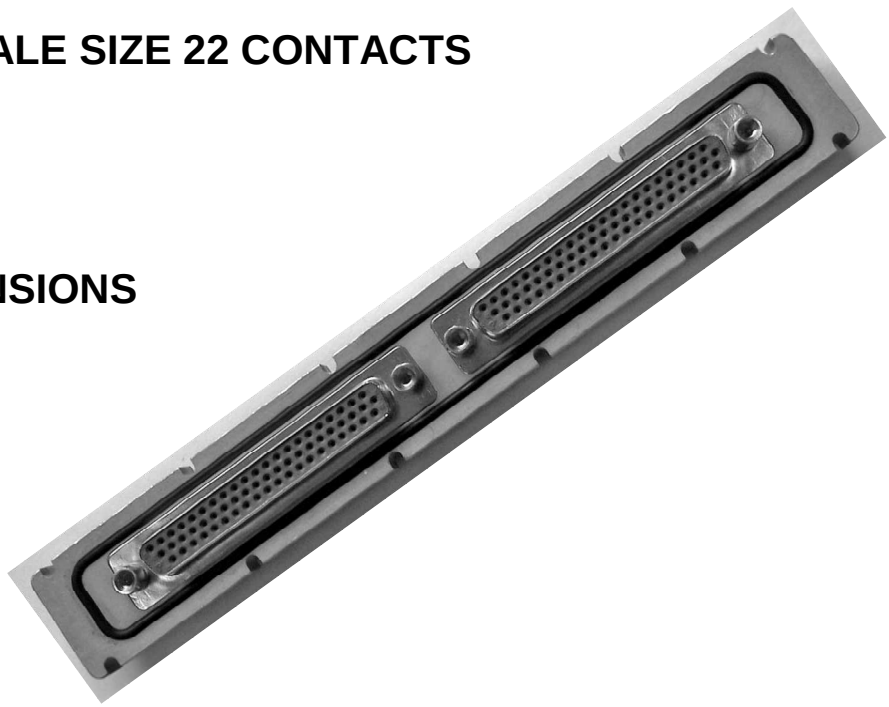
HERMETIC

LOW PROFILE

MOUNTING PLATE

124 FEMALE SIZE 22 CONTACTS

WITH PCB EXTENSIONS



HERMETIC ROUND FLANGES FOR INTERCONNECTION SYSTEM

10 D-SUBMINIATURE FEEDTHROUGHS

237 MALE / FEMALE SIZE 20 CONTACTS

HERMETIC ROUND FLANGES FOR VACUUM CHAMBERS

2 XAVAC® CONNECTORS

5 MALE/FEMALE SIZE 8 CONTACTS
20 MALE/FEMALE SIZE 20 CONTACTS

7 SAVAC® CONNECTORS

546 MALE/FEMALE SIZE 22 CONTACTS

HERMETIC FLANGE FOR VACUUM CHAMBERS

16 XAVAC® CONNECTORS

548 MALE/FEMALE SIZE 20 CONTACTS

HERMETIC ROUND FLANGE FOR VACUUM CHAMBERS

39 XAVAC® CONNECTORS

174 MALE / FEMALE SIZE 20 CONTACTS

1884 MALE / FEMALE SIZE 22 CONTACTS

HERMETIC CONNECTORS / FEEDTHROUGH
CUSTOM DESIGN

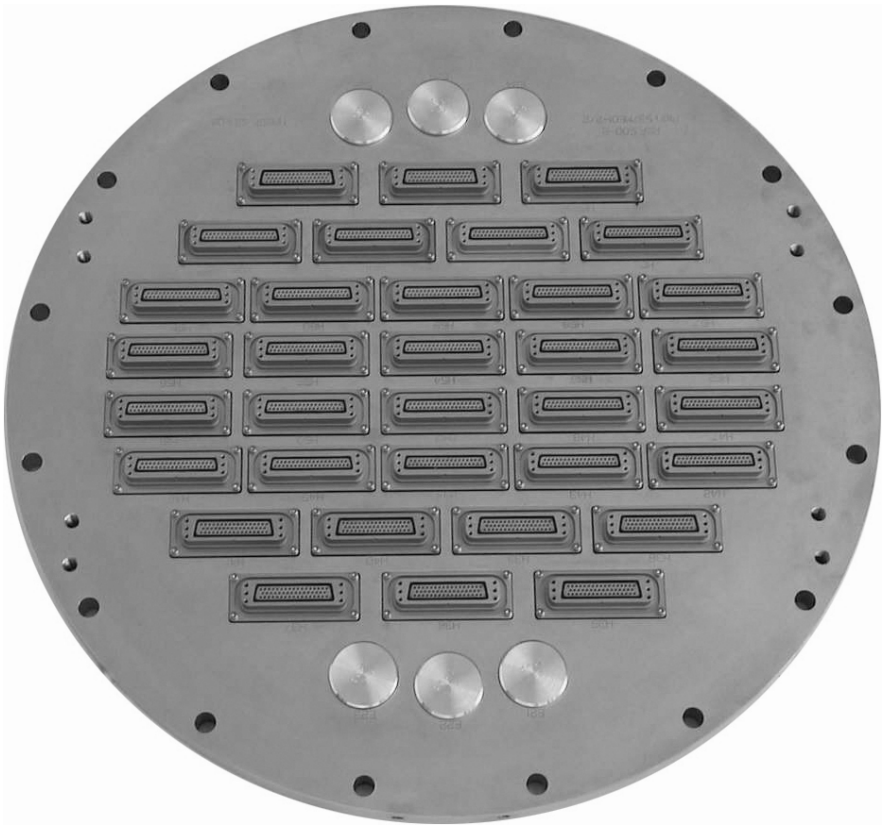
Our Hermetic Connectors are widely recognized for their reliability, durability and performance capabilities. They are utilized worldwide in Scientific Laboratories and Space Industries.

For quality and service at a competitive price, Positronic Industries is unbeaten. Give us a try.

HERMETIC ROUND FLANGE FOR VACUUM CHAMBERS

34 HIVAC® CONNECTORS

1531 FEMALE/FEMALE SIZE 20 CONTACTS



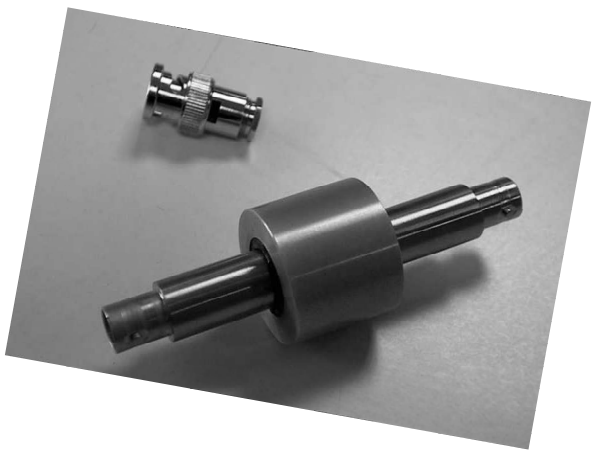
HERMETIC FLANGE REALIZED FOR INTESPACE TOULOUSE – FRANCE

HERMETIC ROUND FLANGE FOR VACUUM CHAMBERS

THERMOCOUPLE SUBMINIATURE-D FEEDTHROUGH WITH SOCKET CONNECTORS AND THERMOCOUPLE WIRES

HERMETIC COAXIAL CONNECTOR FOR VACUUM CHAMBERS

BNC FEEDTHROUGH



TECHNICAL INFORMATION

These torque values are applicable for threads only and do not apply to hardware assemblies. These torque values are approximate and should not be accepted as accurate limits. Indeterminant factors in specific applications preclude the publication of accurate torque values for universal use.

Maximum Torque Values for 4-40 UNC Threads

MATERIAL	Nm	in-lb	in-oz
Stainless-steel	0,90	8,0	128
Brass	0,68	6,0	96
Aluminium	0,45	4,0	64

Unless otherwise specified, dimensional tolerances are:
1) ± 0,03 mm (0.001 inches) for male contact mating diameters.
2) ± 0,08 mm (0.003 inches) for contact termination diameters.
3) ± 0,13 mm (0.005 inches) for all other diameters.
4) ± 0,38 mm (0.015 inches) for all other dimensions.

Products described within this catalog may be protected by one or more patents

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CONVERSION TABLE

	Pascal	bar	Kg/cm^2	Atmosph.
Pascal	1	10^{-5}	$1{,}02.10^{-5}$	$0{,}9869.10^{-5}$
bar	105	1	1,02	0,9869
Kg/cm^2	$0{,}980.10^{-5}$	0,980	1	0,968
Atmosph.	1013.10^{-5}	1,013	1,033	1
Torr	133,3	$0{,}1333.10^{-2}$	$1{,}36.10^{-3}$	1315.10^{-3}
mbar	100	01.10^{-2}	$1{,}02.10^{-3}$	$0{,}9869.10^{-3}$
inch.Hg	3386	$3{,}386.10^{-2}$	0,03453	0,03345
Psi	6990	$6{,}89.10^{-2}$	0,0703	0,008

	Torr	mbar	inch.hg	psi
Pascal	$0{,}75.10^{-2}$	10^{-2}	$0{,}2953.10^{-3}$	$0{,}1451.10^{-3}$
bar	750	1000	29,53	14,51
Kg/cm^2	735	980	28,96	14,22
Atmosph.	760	1013	29,95	14,70
Torr	1	1,333	0,03937	0,01934
mbar	0,750	1	0,02953	0,01451
inch.Hg	25,4	33,86	1	0,4910
Psi	51,75	69,947	2,041	1

POSITRONIC™

GLOBAL Connector SOLUTIONS

POSITRONIC INDUSTRIES S.A.S.

Zone Industrielle d'Engachies - 46 Route d'Engachies

32020 AUCH CEDEX 9 - FRANCE

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