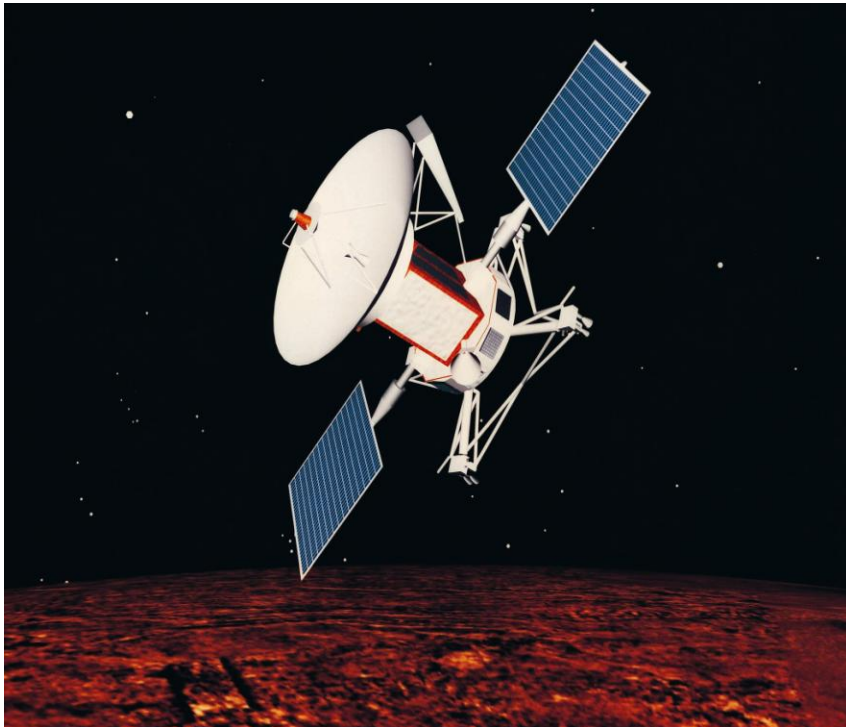




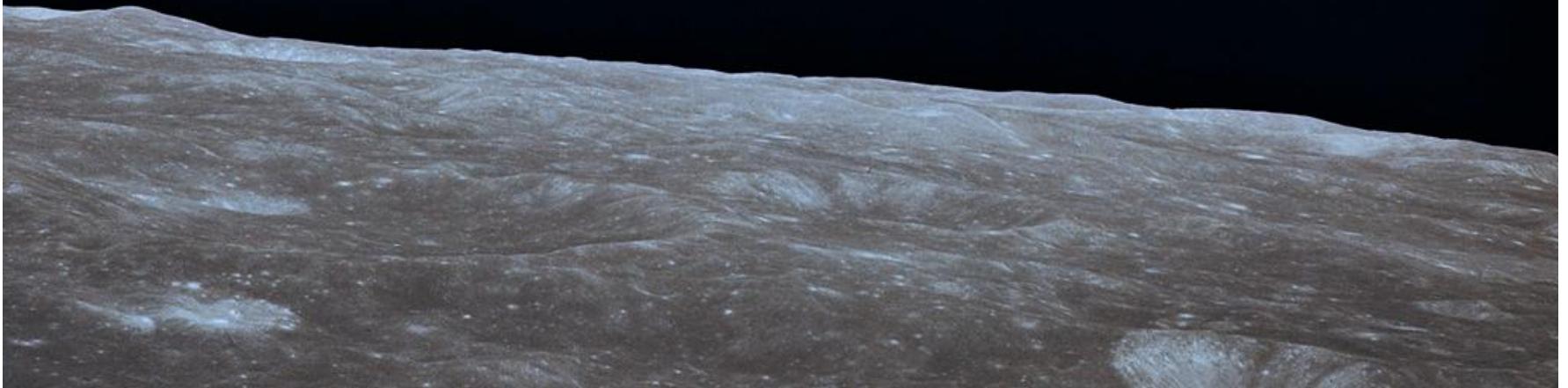
What is the common point between a satellite and a CD ?
卫星与CD之间可有共同之处？





**Both need vacuum to be tested or to be
manufactured.**


第一，都需要真空测试；第二，都是人造的。





VACUUM

**(with helium leak rate真空度（以氦元素为标志的空气泄露程度）
: < 5.10⁻⁹ mBar.l/s)**

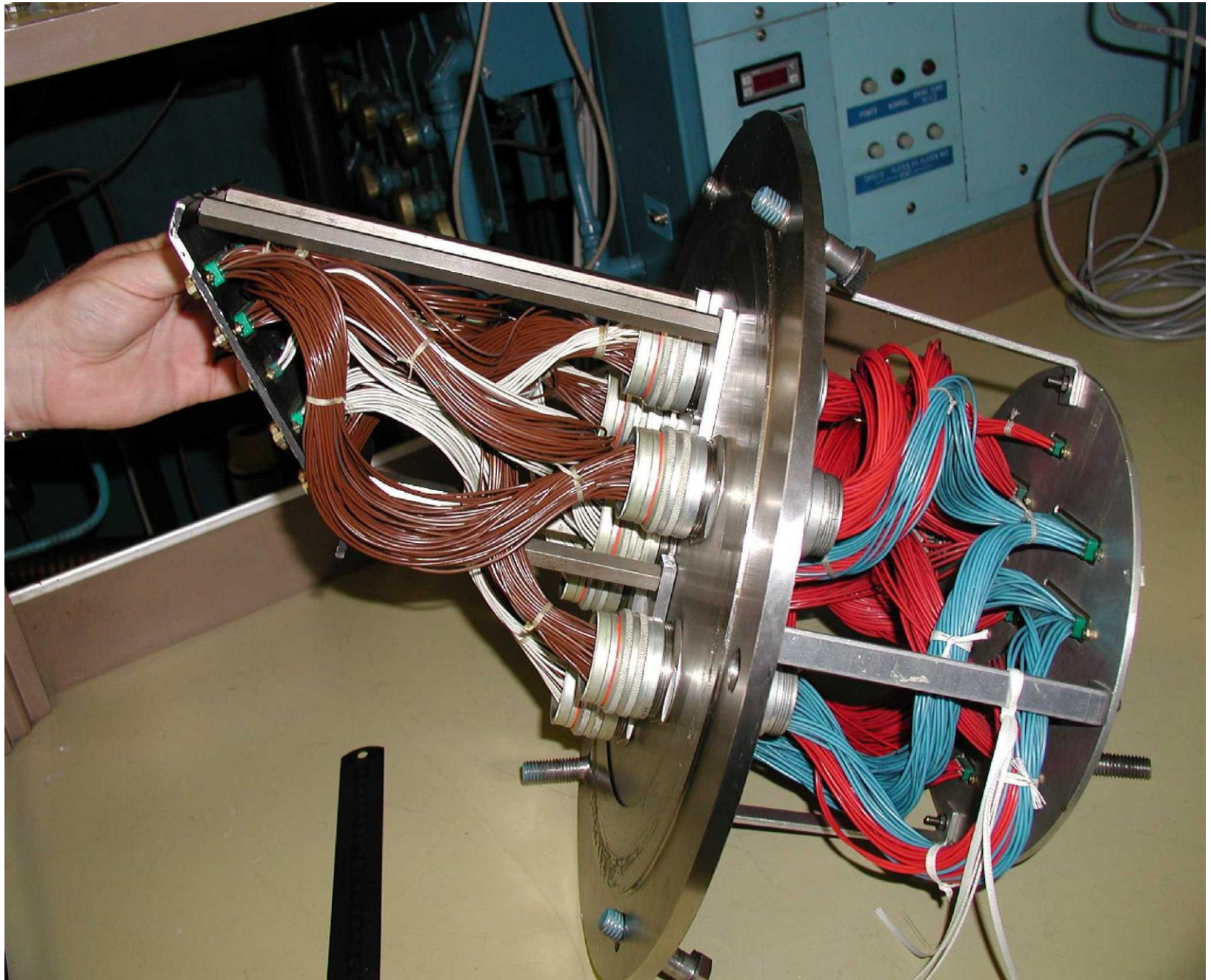


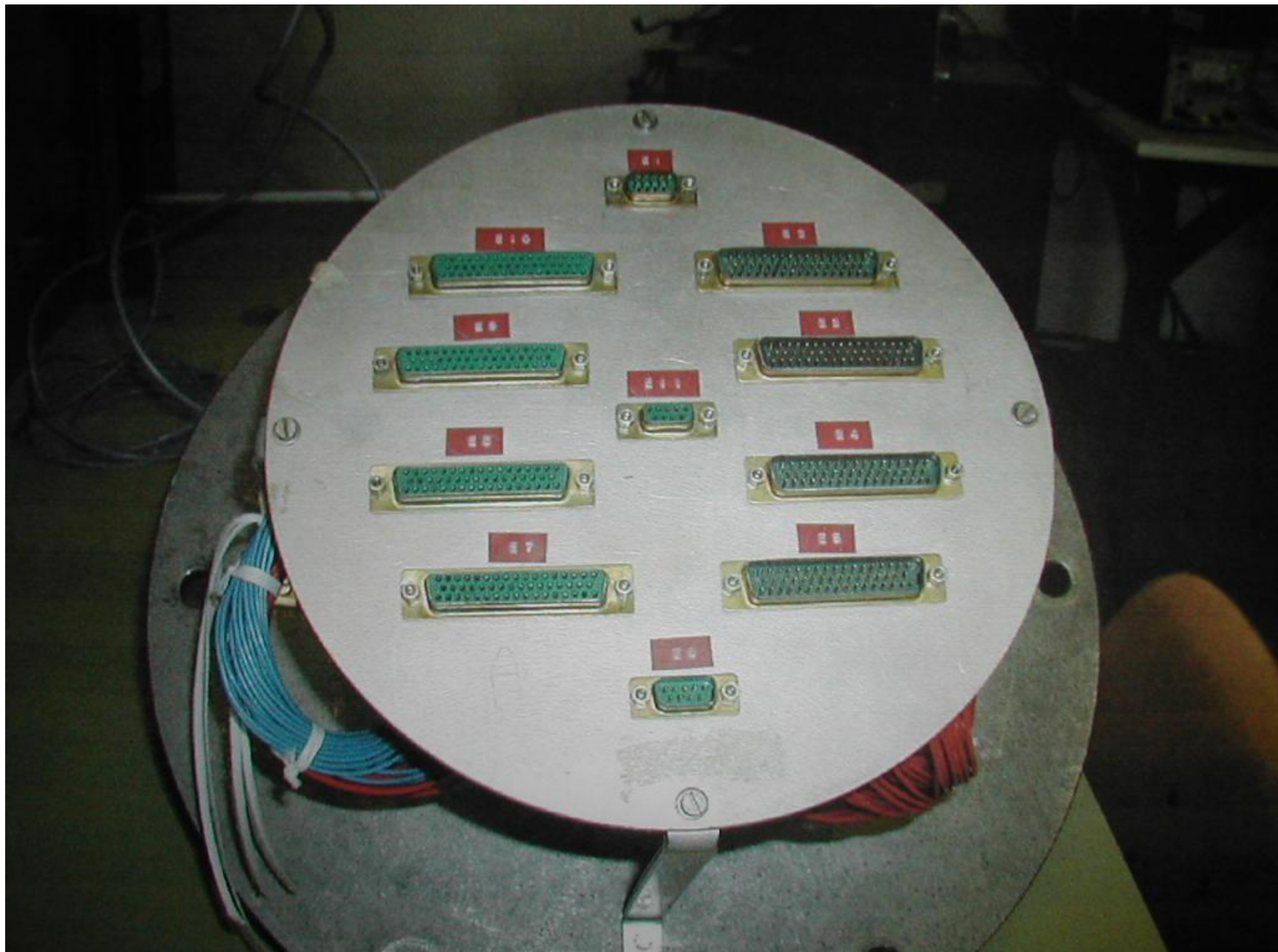
When an electric current has to pass through a gas tight barrier or high pressure differentials, a hermetic feedthrough is essential to maintain integrity.

当电流穿过一段致密的气体屏障或者是一群高压微粒时，一个密封的贯通/连接器对保证其整体性是至关重要的。

For a long time, hermetic feed-throughs were based on MIL circular connectors using Glass/Metal or Ceramic sealing technologies, which are expensive and needed special attention in the manipulation.

很长一段时间以来，密封贯通/连接器是以采用玻璃、金属或陶瓷密封技术的美国军用电路连接器为基础发展起来的，而这些连接器造价昂贵且需要进行一些特殊的处理。





POSITRONIC INDUSTRIES

- **In 1997, POSITRONIC SAS had the idea to use resin, instead of the existing technologies, with the D-Sub connectors allowing users more flexibility .**

Positronic SAS 早于**1997**年即开始用树脂取代现有技术，并配以**D-Sub**型连接器以增加使用者的适配灵活性。

POSITRONIC



2



3



4



5



6



7



8



9



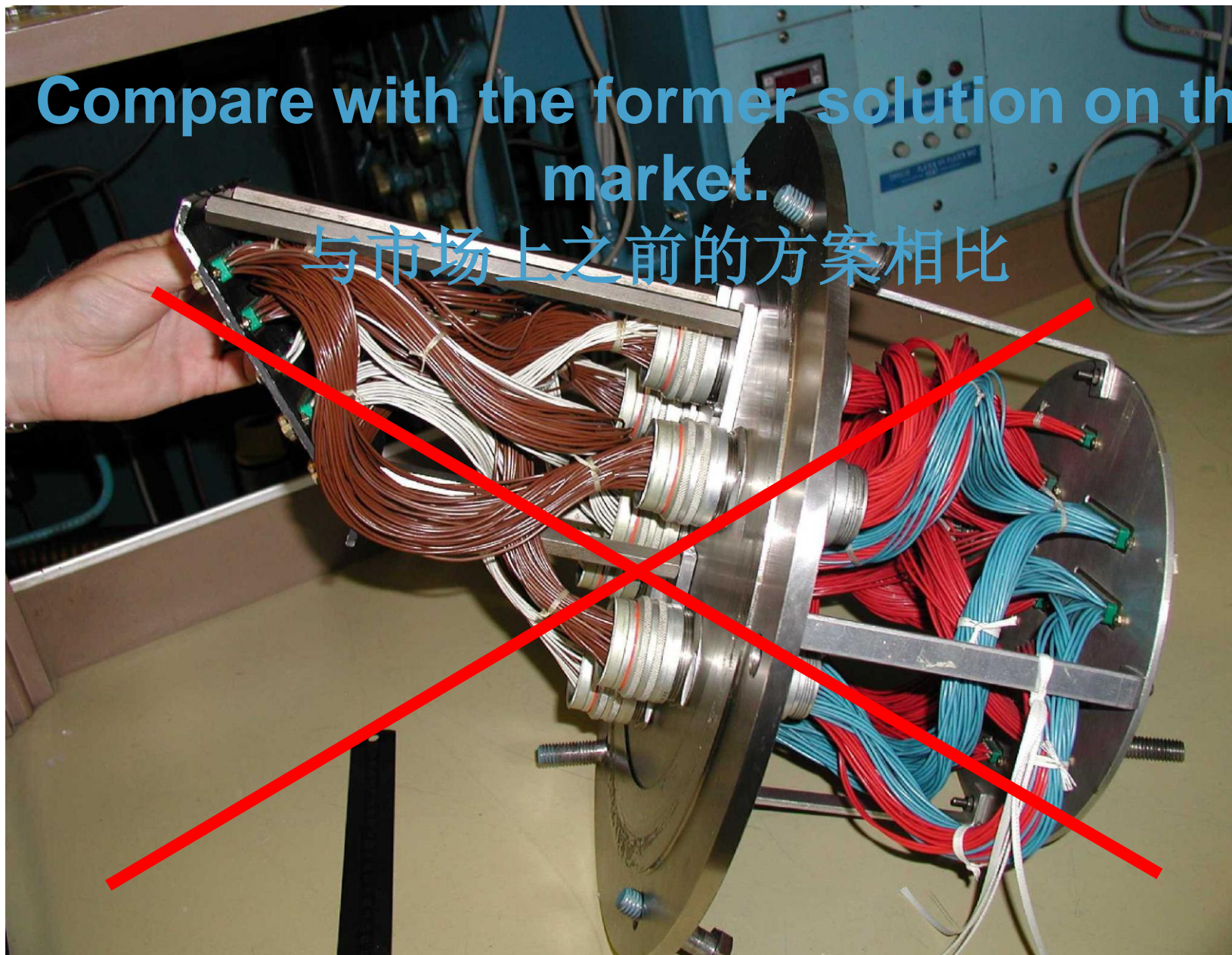
10



PSK 1053 C

Compare with the former solution on the market.

与市场上之前的方案相比



Positronic, with its D-Sub hermetic solution, avoids having to use a cable to change the type of connectors.

Positronic 以其D-Sub型密封方案，避免了必须使用线缆改变连接器的型号。

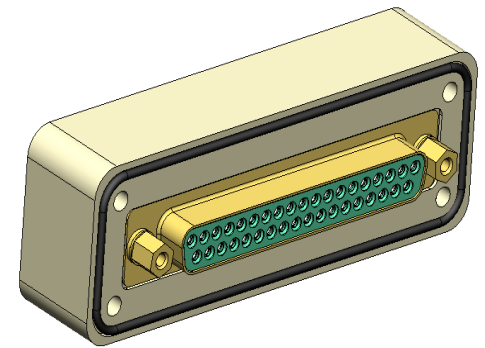
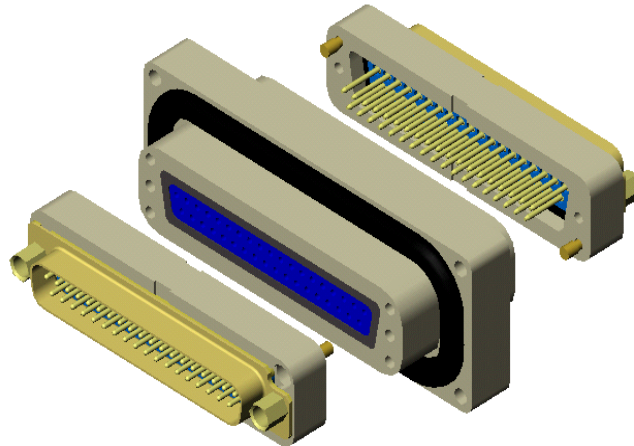
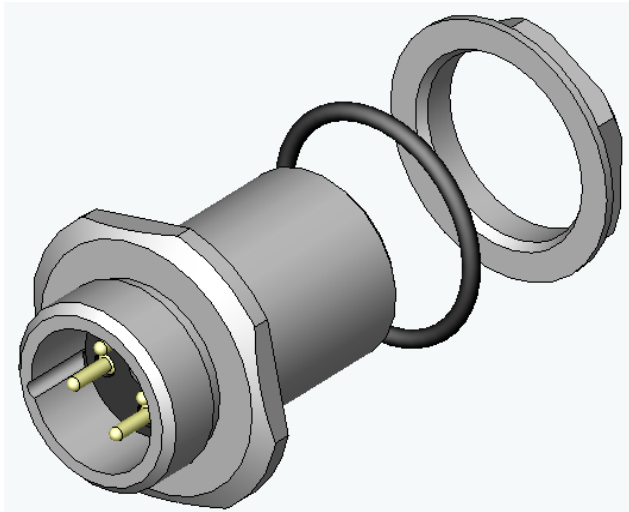
Because most of the equipments use D-Sub connectors.

因为大多数的设备使用D-Sub型连接器。



POSITRONIC introduces a new technology «patented» using resin qualified by the European Space Agency and NASA.

Positronic 依靠其专利技术，采用经欧洲航天局及美国航空航天局认证通过的树脂材料。

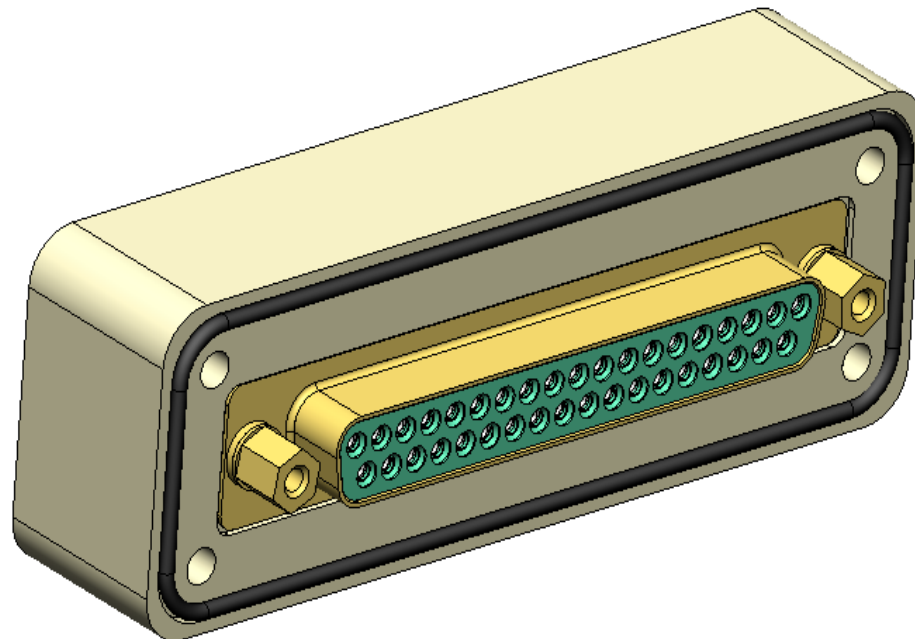


With the others technologies like glass sealed, it is impossible to have female contacts because the heat elevation during the process, destroys the ductile capacity of the material.

而像其它技术,比如“玻璃密封”,它不可能得到(或拥有)母端子,因为制程中的温升会破坏材料的延展性。

Our technology allows to have standard density D-sub feedthroughs with different genders of contacts, male/female, male/male, female/female.

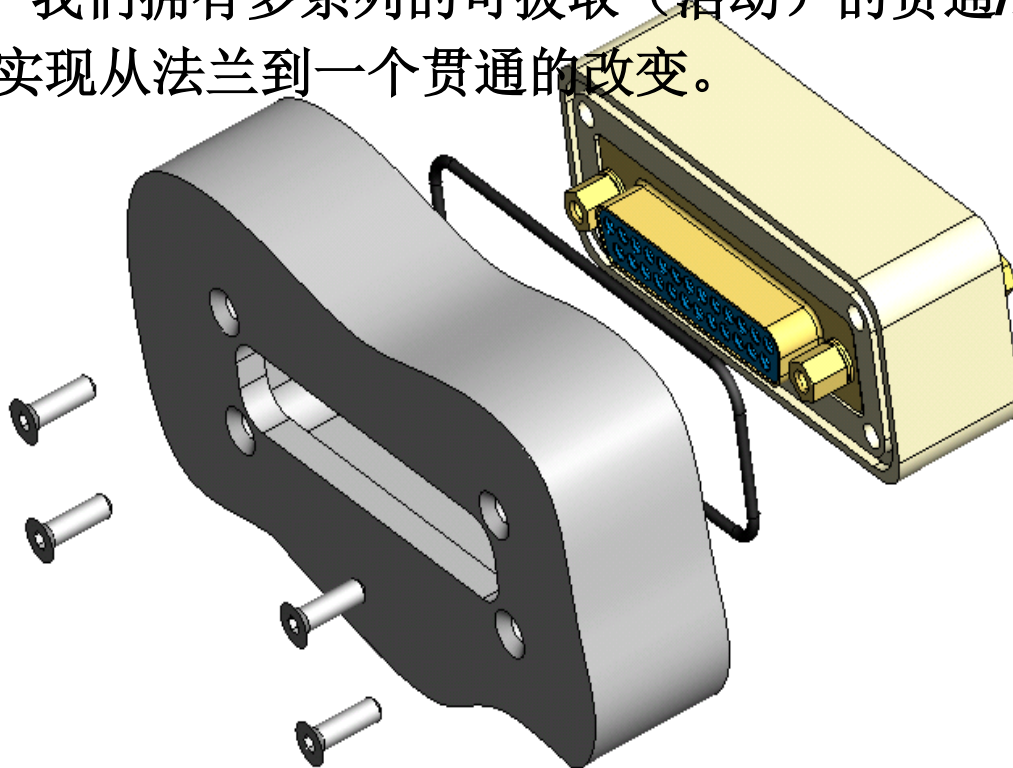
凭借强大的技术实力，我们现有标准密度的不同形式连接的D-Sub型贯通/连接器，包括公对母、公对公及母对母。



Most of the time with the other technologies, the connector is directly sealed in the flange or soldered to the flange and cannot be removed easily. 在大多数时候用其它技术时，连接器是直接密封在法兰上或者是焊接在法兰上，并且不易被去除。

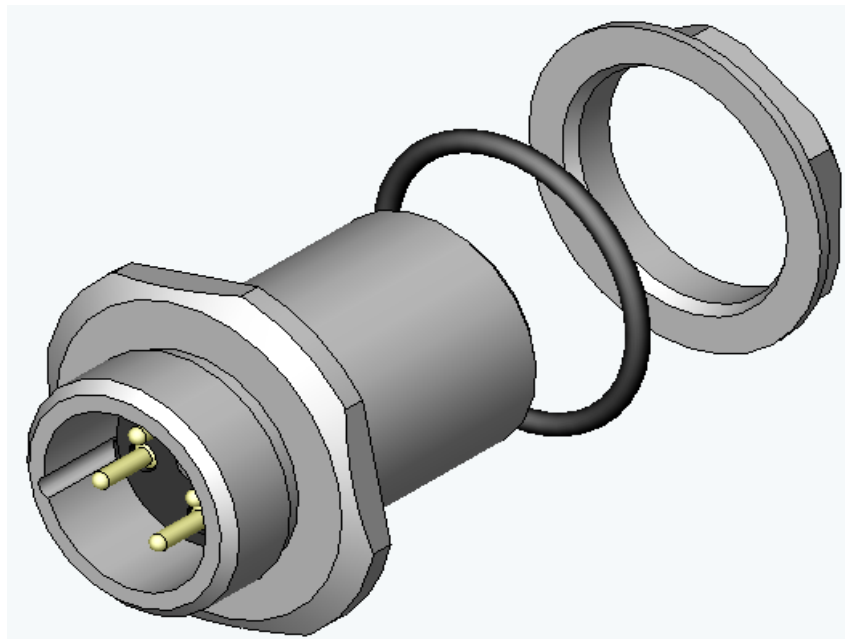
POSITRONIC with his range of removable feedthroughs introduces the capacity to change one feed through from the flange with just a

key. 我们拥有多系列的可拔取（活动）的贯通/连接器，仅通过一个锁键即可实现从法兰到一个贯通的改变。



No comment about fragility when you have shocks or vibrations on glass sealed. 毫无疑问，“玻璃密封”在遇到外界撞击或振动时，其脆弱性是显而易见的。

POSITRONIC using resin in its feedthrough avoids the risk of cracks and anormal leakage. 而我们在贯通连接中使用树脂则避免了开裂的危险和非正常的泄露。



POSITRONIC INDUSTRIES

Let's discover the details of POSITRONIC range of hermetic feedthrough.密封贯通/连接器的系列产品及特点:

Four different series :四大系列: 第一类

➤ XAVAC



D-Sub feedthrough with 4 screws fixed mechanically to the flange.

此类D-Sub型贯通连接器以四只螺丝机械式地紧固在法兰上。



POSITRONIC INDUSTRIES

Let's discover the details of POSITRONIC range of hermetic feedthrough. 密封贯通的系列产品及特点:

Four different series : 第二类

➤ XAVAC

➤ SAVAC



D-sub feedthrough with 2 female jackscrews fixed mechanically to the flange, used when the space volume requested is smaller than

for the Xavac. 此类D-Sub型贯通/连接器带有两个紧固在法兰上的活动螺栓，用作空间要求比Xavac型还要小(严格)时。



POSITRONIC INDUSTRIES

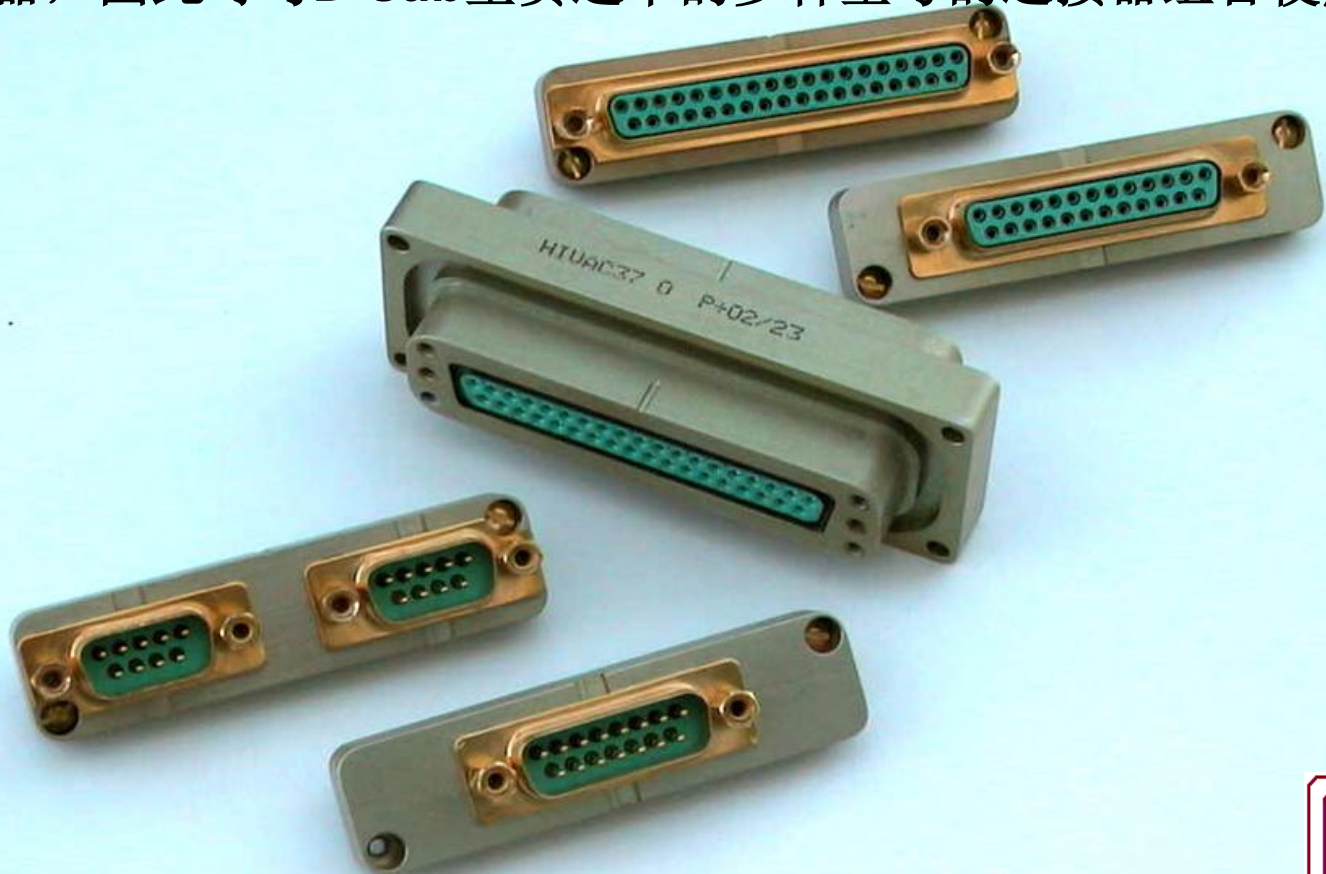
Let's discover the details of POSITRONIC range of hermetic feedthrough.密封贯通的系列产品及特点:

Four different series : 第三类

- XAVAC
- SAVAC
- HIVAC



D-sub feedthrough equipped with D-sub adaptor connectors, to have multi combinations of D-sub size. 此类贯通连接器配以 D-sub 型适配器，因此可与 D-sub 型贯通中的多种型号的连接器的组合使用。



POSITRONIC INDUSTRIES

Let's discover the details of POSITRONIC range of hermetic feedthrough.

Four different series : 第四类

➤ XAVAC

➤ SAVAC

➤ HIVAC

➤ CIVAC



FRONT RUNNER feedthrough with or without flange.

前缘部可滑动式贯通/连接器（包括
带法兰与不带法兰两款）





CONTACT VARIANTS 连接的多变性

TYPE OF CONTACTS 连接的类型

CONNECTOR GENDERS 连接器的公母

TYPE OF APPLICATIONS 电器的类型

NORMAL DENSITY: 一般密度

9-15-25-37-50

HIGH DENSITY: 高密度

15-26-44-62-78-104

MIXED COMBINATIONS: 混合式组合

5W1 up to 46W4





CONTACT VARIANTS 连接多样性

TYPE OF CONTACTS 连接类型

CONNECTOR GENDERS 连接公母

TYPE OF APPLICATIONS 电器类型

NORMAL DENSITY : 一般密度

“MALE / FEMALE”- “MALE / MALE”

“FEMALE / FEMALE” 公母、母母、公公

HIGH DENSITY : 高密度

JUST MALE / FEMALE VERSION 仅公母版

COMBO : 组合式

JUST MALE / FEMALE VERSION 仅公母版



SIGNAL SIZE 20: 7.5A nominal

信号大小 20 : 7.5A (理论上)

SIGNAL SIZE 22 : 5A nominal

COAX : 50 ohms

同轴:

POWER :10, 15, 20, 30, 40 A nominal

电源

THERMOCOUPLES : type K and T

热偶: K型和T型





CONTACT VARIANTS

TYPE OF CONTACTS

CONNECTOR GENDERS

TYPE OF APPLICATIONS

SPACE VERSION:太空版

-STAINLESS STEEL SHELL OR SHELL WITH GOLD OVER COPPER PLATE 不锈钢壳或铜质镀金壳

-WITH OR WITHOUT DIMPLED 有凹或无凹

-RESIDUAL MAGNETISM :20 GAMMA MAX.
残余磁性：最大20伽马

-NO OUTGASSING 无内涵气体

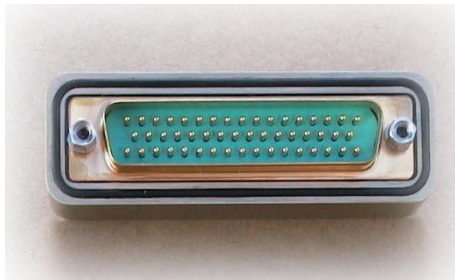
INDUSTRIAL VERSION:工业版

-STAINLESS STEEL SHELL 不锈钢壳或铜质镀金壳

-NO OUTGASSING 无内涵气体



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.

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 high tensile copper alloy with brass or stainless steel shroud.

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, gold iridite.

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

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 female contact features a rugged "Closed Entry" design having a brass or stainless steel shroud. 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.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL SIGNAL CONTACTS

Contact current rating: 7,5 A nominal, size 20
5 A nominal, size 22

Initial Contact Resistance: 0.008 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: 0.005 ohms maximum

Proof Voltage: 1000 V r.m.s.

SHIELDED CONTACTS

Initial Contact Resistance: 0.008 ohms maximum

Nominal Impedance: 50 ohms

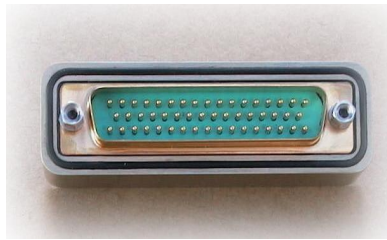
Insertion Loss: -0.46dB at 1 GHz

-1.5 dB at 2 GHz

VSWR: 1.15 average at 1 GHz

1.56 average at 2 GHz

Savac®



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 Contact: Closed entry design with brass or stainless steel shroud.
Size 22 Contact: 0,030 inch (0,76mm) diameter. Female Contact: Closed entry design with brass or stainless steel shroud.

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 < 5-10-9mbar.l/s under a vacuum of 10-9 mbar

Outgassing : Total Mass Loss – TML < 1 %

Collected Volatile Condensable Materials – CVCM < 0,1 %

ELECTRICAL CHARACTERISTICS AT SEA LEVEL SIGNAL CONTACTS

Contact current rating: 7,5 A nominal, size 20
5 A nominal, size 22

Initial Contact Resistance: 0.008 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: 0.005 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.

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

Savac®

本系列产品是供太空及工业真空设备用的D-Sub(D型—特微型)贯通/连接器, 这两类都两个有螺纹孔和一个环形圈, 这些特点可令任一款连接器与之对接并应对真空, 从而给予客户多各选择。至于连接器的型号可依客户之不同要求定制, 一般密度绝缘子为9、15、25、37、50针(AWG20)公母、公公、母母; 高密度者为15、26、44、62、78及104针(AEG22)公母、公公、母母; 混合式组合(电源、同轴、信号)者仅公母型。

材料及涂覆(表面处理)

绝缘子: 符合ASTM-D-5948标准的玻璃芯或符合MIL-M-24519, UL94V0, ASTM E-595, NASA-RP-1124标准的树脂玻璃芯;

端子针: 以高精度车床车出的高强度红铜合金, 外表层覆以黄铜和不锈钢。

壳体: 黄铜料, 并于红铜或不锈钢外层上镀以1.25微米的金。

外壳: 铝合金, 金黄色到黄褐变化涂层面;

环形圈: 氟乙酰胺; 应客户要求可用其它材料。

机械性能

固定针: 8针, 针直径3.61毫米, 其特点有大面积接触(LSA)、完全插入、镀铜片张力强大。

20针, 直径1.02MM; 母针: 完全插入式设计并以黄铜或不锈钢包覆。22针, 直径0.76MM, 母针同上。

插针张力: 插入时: 40牛;

壳: 公壳可凹入EMI/ESD地线;

极性: 梯形壳

机械作业: 500次, 至少, 依IEC-512-5

气候特点

温度范围: -40° C—125° C 此温度范围在一定条件下还可以拓宽, 须询厂家。

氦释放率: < 5-10-9mbar.l/s under a vacuum of 10-9 mbar

跑气: < 1 %

集成地压缩的不稳定物质CVCM: < 0, 1 %

所有该系列之产品出厂前都经过了泄露试验; 除了标准的配型宝西亦能提供“插板”式或“飞线”式的连接器。所有本系之产品都采

经高精度车床制出之插针, 用具有很强之强度及耐磨性。母端子具有“完全插入”的独特设计, 表面都有黄铜或不锈钢之覆盖。

零海拔处电子信号性能

端子额定电流: 7.5A, size 20;

5A, size 22;

原始电阻: 最大0.008欧姆; 最大电压: 1000 vrms

电源端子: 额定电流10,15,20,30,40A

原始电阻电: 0.005欧姆;

最大电压: 1000vrms

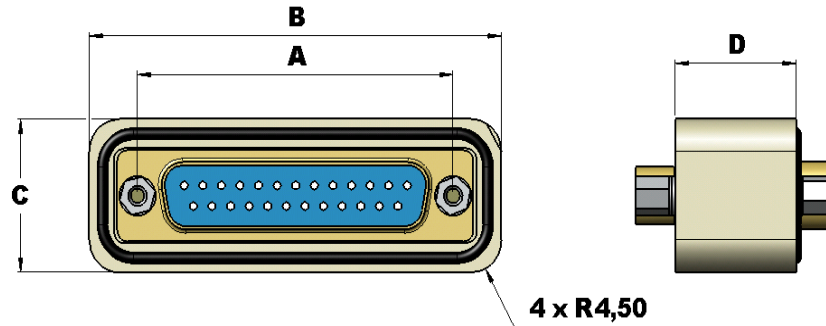
屏闭端子: 原始电阻: 0.008欧姆; 理论阻抗: 50欧姆

插入损失: 0.46db每1GHz

1.5db每2GHz

VSWR(电压驻波比):平均1.15每1GHz, 平均1.56每2GHz

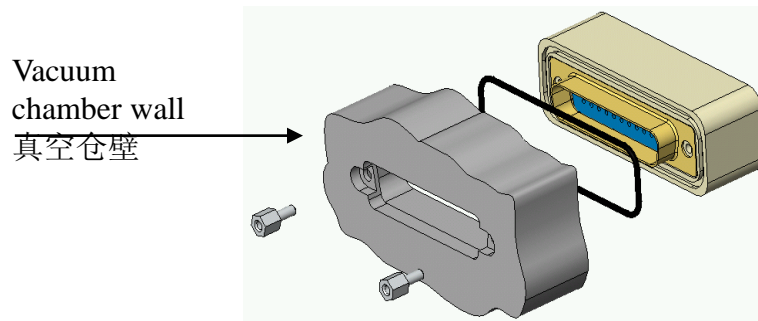
SAVAC® DIMENSIONS



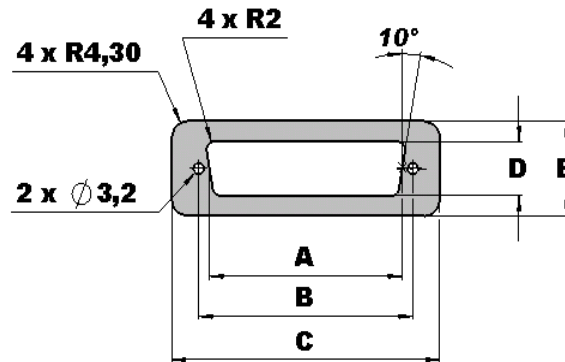
	A	B	C	D	
				Type 0-1*	Type 2-3-4*
SHELL SIZE 1	24,99	39,37	21,08	18	24
SHELL SIZE 2	33,32	47,7	21,08	18	24
SHELL SIZE 3	47,04	61,42	21,08	18	24
SHELL SIZE 4	63,5	77,88	21,08	18	24
SHELL SIZE 5	61,11	75,49	23,9	18	24
SHELL SIZE 6	63,5	77,88	25,5	18	24

* See ordering information : STEP 5 – Type of contacts

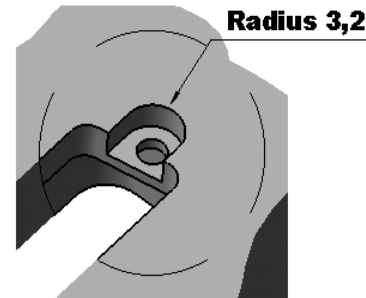
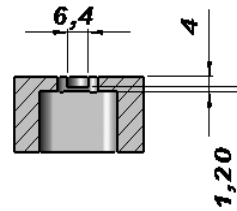
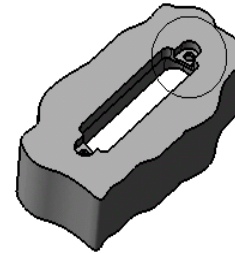
SAVAC® MOUNTING



SAVAC® PANEL CUTOUT INFORMATION



The depths are identical for all SAVAC sizes



	A	B	C	D	E
SHELL SIZE 1	19,60	24,99	40,40	11,50	22,10
SHELL SIZE 2	28,00	33,32	48,70	11,50	22,10
SHELL SIZE 3	41,70	47,04	62,50	11,50	22,10
SHELL SIZE 4	55,00	63,50	78,90	11,50	22,10
SHELL SIZE 5	58,20	61,11	76,50	14,25	24,90
SHELL SIZE 6	58,20	63,50	78,90	15,80	26,50

ORDERING INFORMATION – CODE NUMBERING SYSTEMS

STEP	1	2	3	4	5	-	6
	SAVAC	15	M/F	G	.0	-	
<p>STEP 1 – BASIC SERIES SAVAC series</p>						<p>STEP 6 – SPECIAL OPTIONS Consult Sales Department</p>	
<p>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</p>						<p>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)</p>	
<p>STEP 3 – CONNECTOR GENDER M/F : Male/Female M/M : Male/Male Not available for high density / mixed combinations F/F : Female/Female Not available for high density / mixed combinations</p>						<p>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</p>	

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.

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 high tensile copper alloy with brass or stainless steel shroud.

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, gold iridite.

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

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 female contact features a rugged "Closed Entry" design having a brass or stainless steel shroud. 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.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL SIGNAL CONTACTS

Contact current rating: 7,5 A nominal, size 20
5 A nominal, size 22

Initial Contact Resistance: 0,008 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: 0.005 ohms maximum.

Proof Voltage: 1000 V r.m.s.

Xavac®



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 Contact: Closed entry design with brass or stainless steel shroud.
Size 22 Contact: 0,030 inch (0,76mm) diameter. Female Contact: Closed entry design with brass or stainless steel shroud.

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 factory.

Helium Leak Rate < 5-10-9mbar.l/s under a vacuum of 10-9 mbar

Outgassing : Total Mass Loss – TML < 1 %

Collected Volatile Condensable Materials – CVCM < 0,1 %

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.

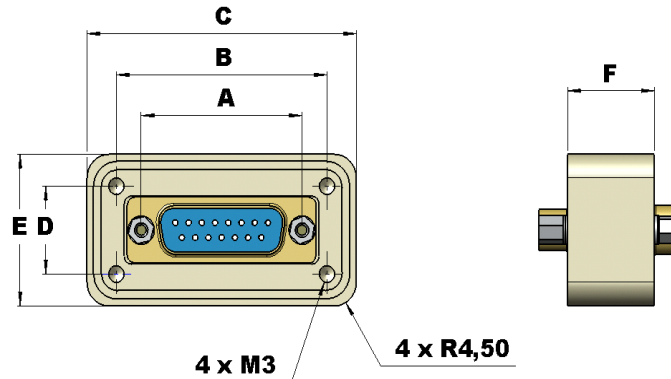
HIGH VOLTAGE CONTACTS

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.

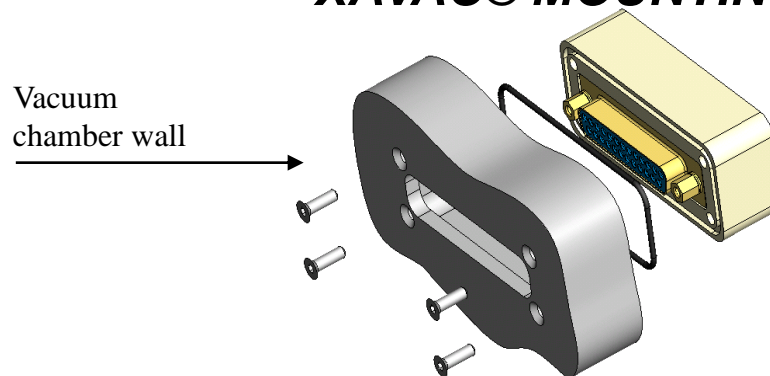
XAVAC® DIMENSIONS



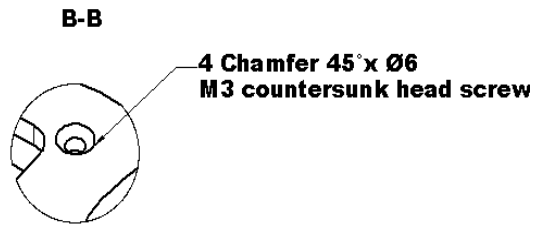
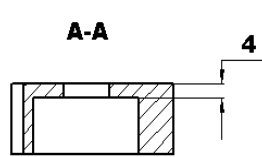
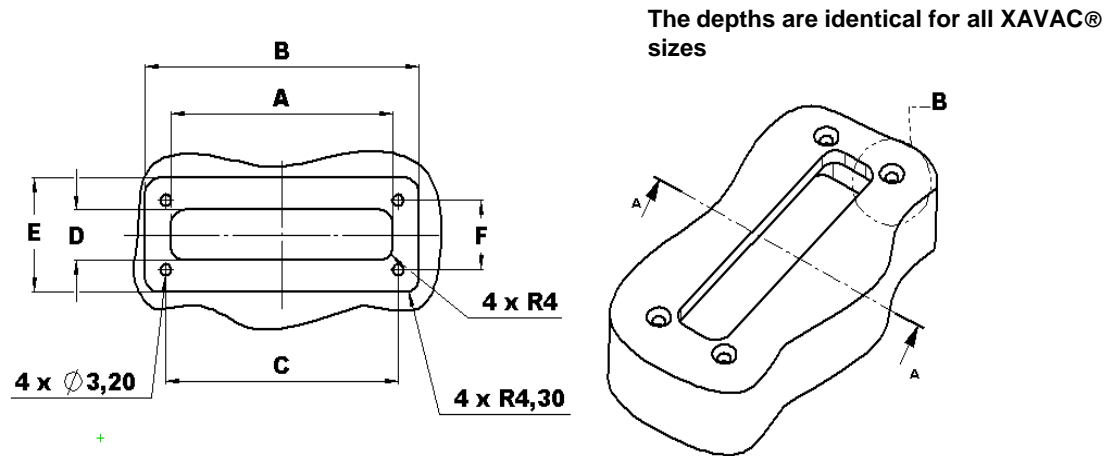
	A	B	C	D	E	F	
						Type 0-1*	Type 2-3-4*
SHELL SIZE 1	24,99	34,29	46,37	16,00	28,08	18	24
SHELL SIZE 2	33,32	43,64	55,79	16,76	28,92	18	24
SHELL SIZE 3	47,04	56,36	67,42	16,02	27,08	18	24
SHELL SIZE 4	63,50	73,46	85,38	16,90	28,82	18	24
SHELL SIZE 5	61,11	71,28	82,99	19,68	31,40	18	24
SHELL SIZE 6	63,50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

* See ordering information : STEP 5 – Type of contacts

XAVAC® MOUNTING



XAVAC® PANEL CUT-OUT INFORMATION

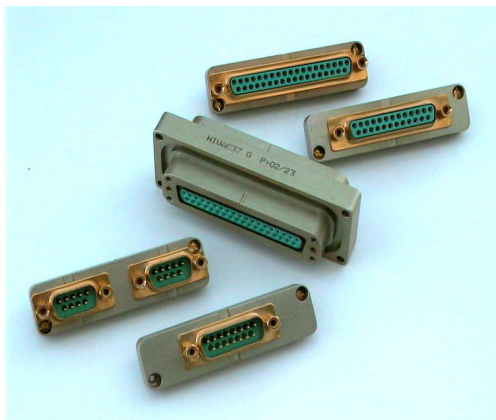


	A	B	C	D	E	F
SHELL SIZE1	32	47,4	34,29	11,5	29,1	16
SHELL SIZE2	40,3	56,8	43,64	11,5	29,9	16,76
SHELL SIZE3	54	68,4	56,36	11,5	28,1	16,02
SHELL SIZE4	70,5	86,4	73,46	11,5	29,8	16,9
SHELL SIZE5	68,1	84	71,28	14,25	32,4	19,68
SHELL SIZE6	70,5	85,4	73,26	15,8	33	20,88

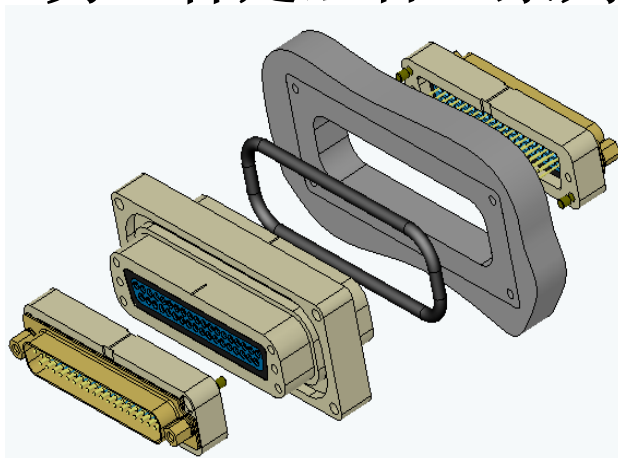
ORDERING INFORMATION – CODE NUMBERING SYSTEMS

STEP	1	2	3	4	5	-	6
	XAVAC	15	M/F	G	.0	-	
<p>STEP 1 – BASIC SERIES XAVAC series</p> <p>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</p> <p>STEP 3 – CONNECTOR GENDER M/F:Male/Female M/M:Male/Male Not available for high density / mixed combinations F/F :Female/Female Not available for high density / mixed combinations</p>							<p>STEP 6 – SPECIAL OPTIONS Consult Sales Department</p> <p>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)</p> <p>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</p>

HIVAC®



OR THE SOLUTION TO HAVE ONE OR TWO FEEDTHROUGHS AND COULD HAVE DIFFERENTS SIZE OF D-SUB CONNECTORS 或者还有两种方案，一种是有一到两个贯通；另一种是组合一系列大小不同的D-Sub型连接器。



COMBINATION组合

THE FEEDTHROUGH ALWAYS HAVE FEMALE CONTACTS.贯通/连接都是有母端子的。

THE NORMAL DENSITY ADAPTATOR CAN BE MALE/ FEMALE OR MALE /MALE.正常密度适配器（型号）可以是公母、公公型的。

THE HIGH DENSITY ADAPTATOR WILL BE SYSTEMATICALLY MALE / FEMALE.高密度适配器将是“系统式”的公母型。



5 TYPES OF INSULATORS FEEDTHROUGH AVAILABLE

可用于贯通/连接器中的5种绝缘子

NORMAL DENSITY 37 CONTACTS

NORMAL DENSITY 50 CONTACTS

HIGH DENSITY 44 CONTACTS

HIGH DENSITY 62 CONTACTS

HIGH DENSITY 104 CONTACTS

FOR THE NORMAL DENSITY 37 CONTACTS FEEDTHROUGH,对于正常密度的37针贯通,

5 ADAPTATORS AVAILABLES 可适配的
5种型号:

1 x 9 CONTACTS

2 x 9 CONTACTS

1 x 15 CONTACTS

1 x 25 CONTACTS

1 x 37 CONTACTS



FOR THE NORMAL DENSITY 50 CONTACTS FEEDTHROUGH,对于正常密度的50针的,

5 ADAPTATORS AVAILABLES :

1 x 9 CONTACTS

2 x 9 CONTACTS

1 x 15 CONTACTS

1 x 25 CONTACTS

1 x 50 CONTACTS



FOR THE HIGH DENSITY 44 CONTACTS FEEDTHROUGH, 对于44针的,

3 ADAPTATORS AVAILABLES

1 x 15 CONTACTS

1 x 26 CONTACTS

1 x 44 CONTACTS



**FOR THE HIGH DENSITY 62
CONTACTS FEEDTHROUGH,**

1 ADAPTATOR AVAILABLE

1 x 62 CONTACTS



FOR THE HIGH DENSITY 104 CONTACTS FEEDTHROUGH, 对于高密度 104针的,

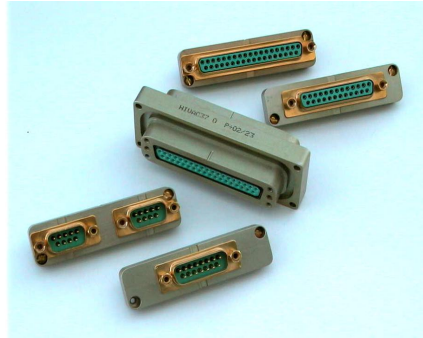
2 ADAPTATORS AVAILABLES

1 x 78 CONTACTS

1 x 104 CONTACTS



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.

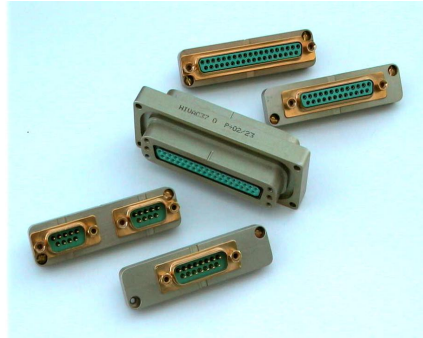
An Adapter Connector allows several combinations with a feedthrough. The advantage of this system is that it allows the user the flexibility to purchase a single feedthrough and use it with a variety of adapters.

HIVAC® series connectors utilize precision machined contacts for strength and durability. The female contact features a rugged "Closed Entry" design having a brass shroud. 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.



Hivac®



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 high tensile copper alloy with brass shrouds.

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, gold iridite.

O-ring: Viton (fluorocarbene). 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: 0.008 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 contact: Closed entry design with brass shroud.
Size 22 Contact: 0,030 inch (0,76mm) diameter.
Female Contact: Closed entry design with brass shroud.

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.

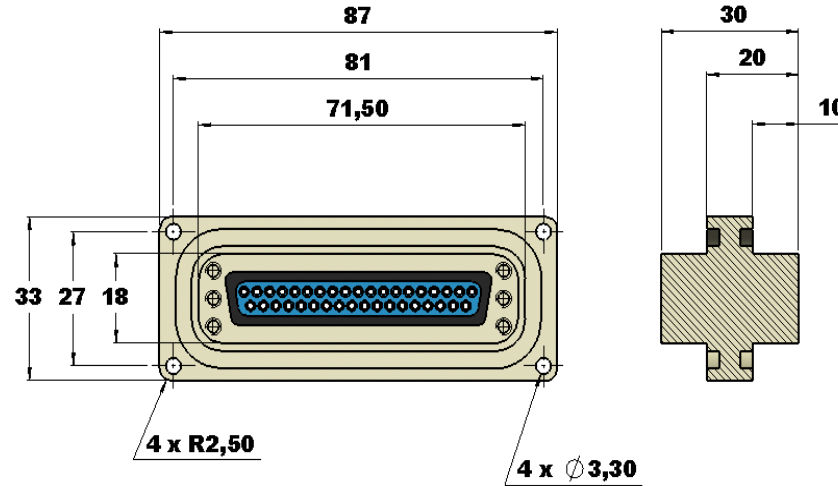
Helium Leak Rate < 5-10-9mbar.l/s under a vacuum of 10-9 mbar

Outgassing : Total Mass Loss – TML < 1 %

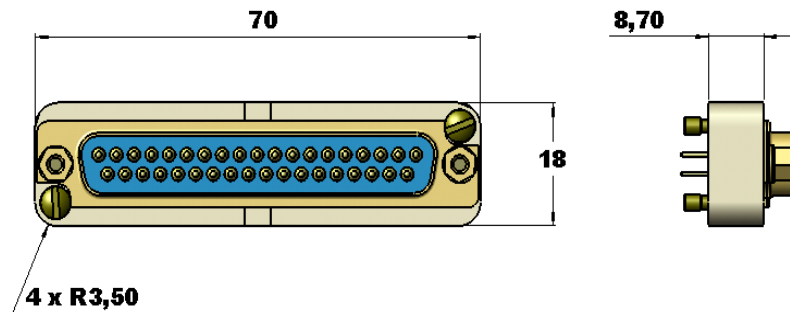
Collected Volatile Condensable Materials – CVCM < 0,1 %



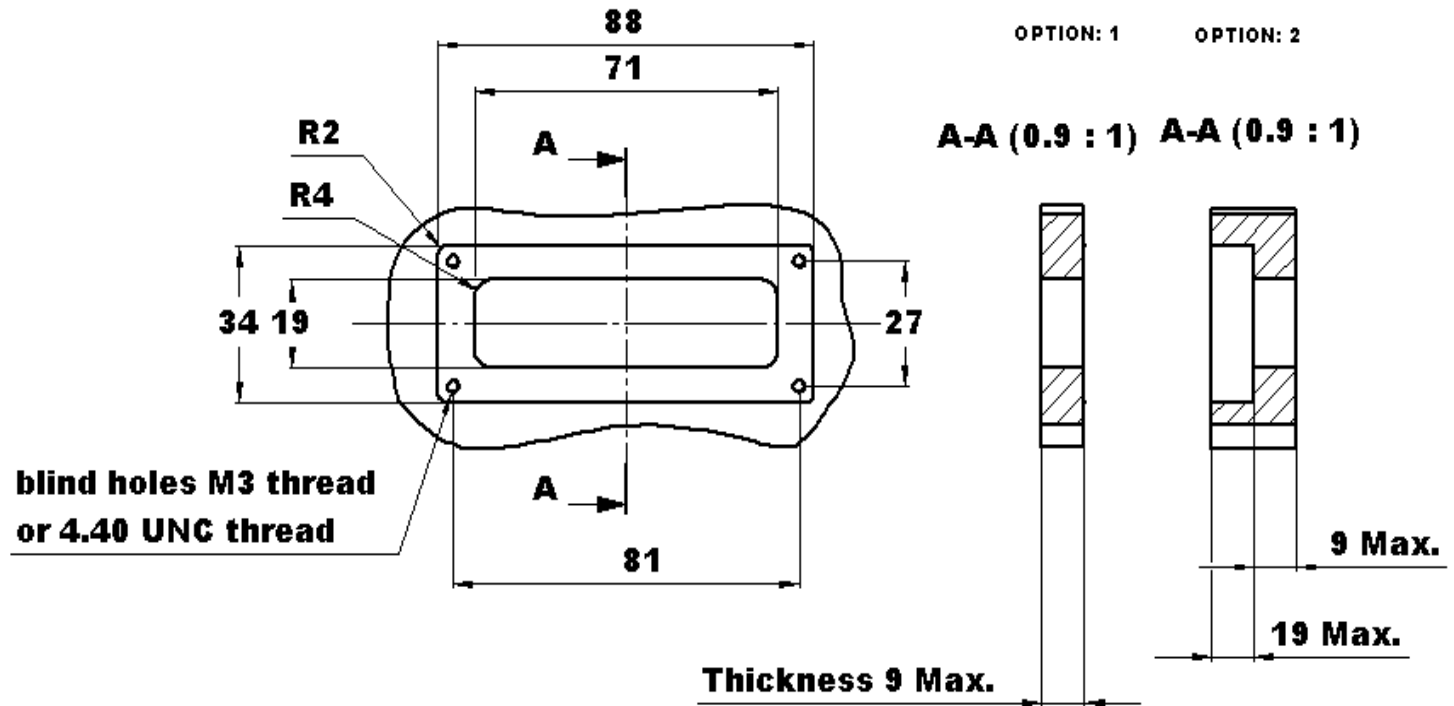
HIVAC® FEEDTHROUGH DIMENSIONS



HIVAC® ADAPTER DIMENSIONS

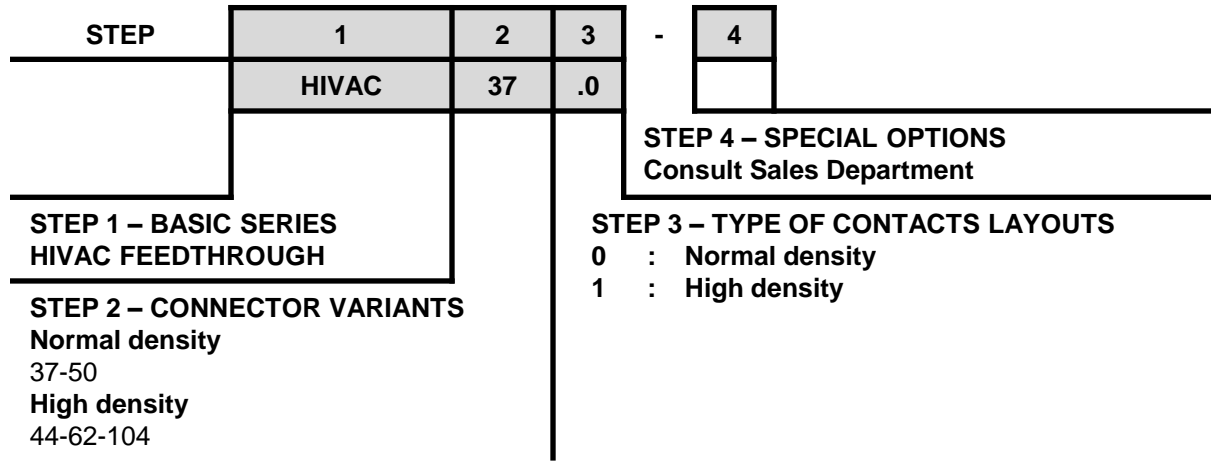


HIVAC® FEEDTHROUGH PANEL CUTOUT INFORMATION



ORDERING INFORMATION – CODE NUMBERING SYSTEMS

FEEDTHROUGH PART-NUMBERS



ADAPTER PART-NUMBERS

STEP	1	2	3	4	5	-	6
	HIVAC	37	25	M	G		
STEP 1 – BASIC SERIES HIVAC ADAPTER						STEP 6 – SPECIAL OPTIONS Consult Sales Department	
STEP 2 – HIVAC FEED-THROUGH Normal density 37-50 High density 44-62-104						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 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 F : Female contact MM-FF : Use only with 37.2X9 and 50.2X9 Hivac Adapter MF : 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	

RECAPITULATIVE PART-NUMBER

HIVAC Feedthrough	Male HIVAC Adapter	Female HIVAC Adapter	Male/Female HIVAC Adapter
HIVAC37.0	HIVAC37.9M*	HIVAC37.9F*	
	HIVAC37.2X9MM*	HIVAC37.2X9FF*	HIVAC37.2X9MF*
	HIVAC37.15M*	HIVAC37.15F*	
	HIVAC37.25M*	HIVAC37.25F*	
	HIVAC37.37M*	HIVAC37.37F*	
HIVAC50.0	HIVAC50.9M*	HIVAC50.9F*	
	HIVAC50.2X9MM*	HIVAC50.2X9FF*	
	HIVAC50.15M*	HIVAC50.15F*	
	HIVAC50.25M*	HIVAC50.25F*	
	HIVAC50.50M*	HIVAC50.50F*	
HIVAC Feedthrough	Male HIVAC Adapter	Female HIVAC Adapter	
HIVAC44.1	HIVAC44.15M*	HIVAC44.15F*	
	HIVAC44.26M*	HIVAC44.26F*	
	HIVAC44.44M*	HIVAC44.44F*	
HIVAC62.1	HIVAC62.62M*	HIVAC62.62F*	
HIVAC104.1	HIVAC104.78M*	HIVAC104.78F*	
	HIVAC104.104M*	HIVAC104.104F*	

* Type of application : G, D or S (See Code Numbering System)

Civac®



**Without
flange**

不带法兰



**With
flange**

带法兰

Civac

**THE HERMETIC FRONT RUNNER FOR THE
INDUSTRIAL VACUUM APPLICATION.**

工业真空上所用的密封滑道

**ALL SIZE CONTACT ARRANGEMENT COULD BE
PRODUCE. 各式大小皆可制造。**





Civac
®



Without flange

Civac®



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, gold iridite - 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
EM/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	< 5-10⁻⁹mbar.l/s under a vacuum of 10⁻⁹ mbar
Outgassing : Total Mass Loss – TML	< 1 %
Collected Volatile Condensable Materials – CVCM	< 0,1 %

ORDERING INFORMATION – CODE NUMBERING SYSTEMS

STEP	1	2	3	4	5	6	7
	CIVAC	11	M/ M	31 6	M	K6 A	
<p>STEP 1 CIVAC – Circular Vacuum Connector</p>							<p>STEP 7 Consult the factory</p>
<p>STEP 2 – HOUSING SIZE 11 – Size 11 Housing 19 – Size 19 Housing</p>							<p>STEP 6 – FLANGE TYPE 0A(S) – without flange ① K*A(S) – ISO K F*A(S) – ISO F * = Flange size in inches (6-8-10-16-20-25-32-40-50) S = Stainless steel A = Aluminium ① Consult the factory for panel thickness</p>
<p>STEP 3 – GENDER First letter is mounted outside Vacuum equipment M/MMale/Male F/FFemale/Female M/FMale/Female F/MFemale/Male</p>							<p>STEP 5 – SERVICE CLASS O – Standard M – EMI/RFI Shielded</p>

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

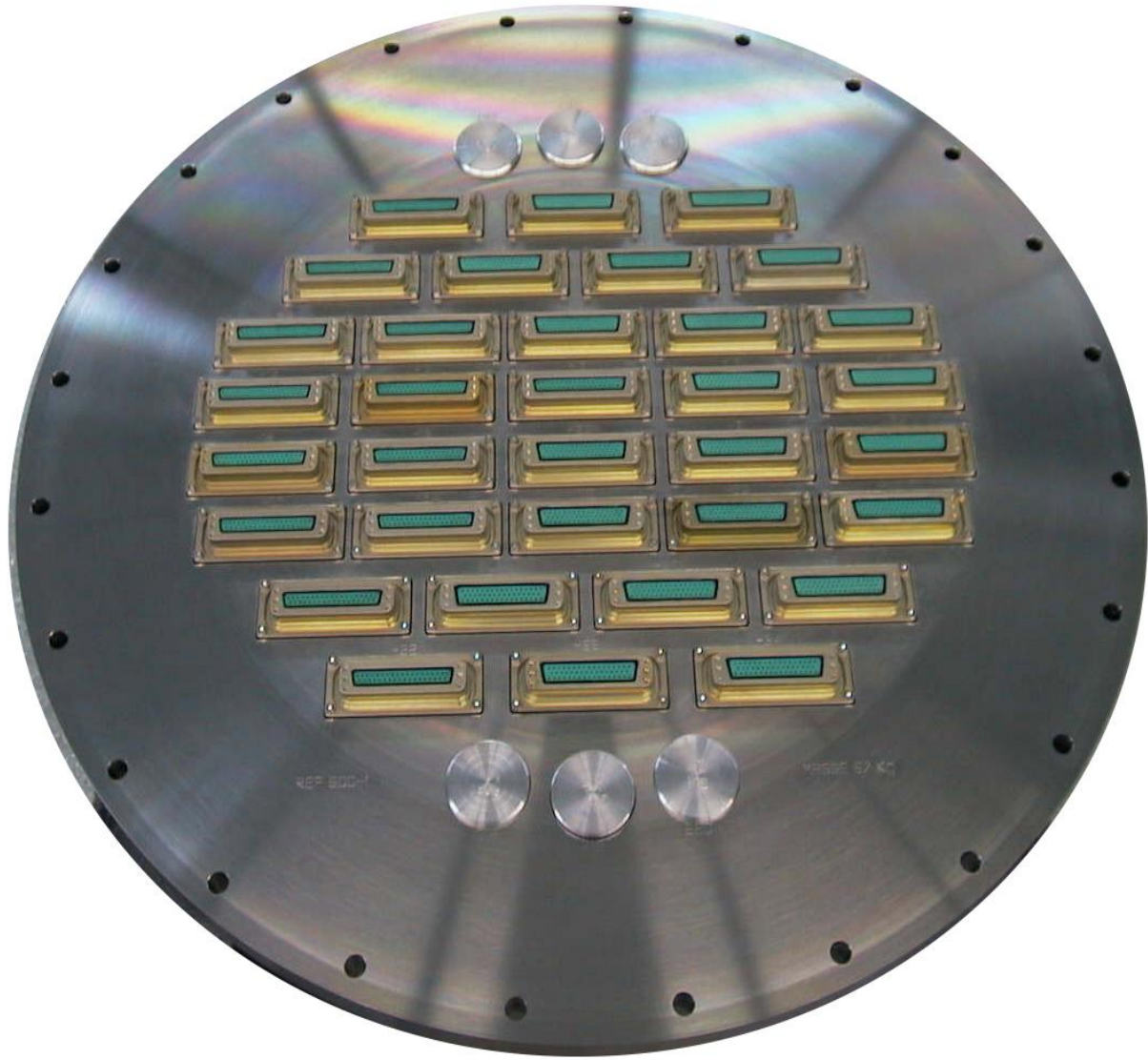
**See Front Runner Series Product Catalog for detailed dimensional information.*

CUSTOM DESIGN 客户设计

-FLANGES WITH SAVAC OR HIVAC

-带SAVAC 或HIVAC法兰



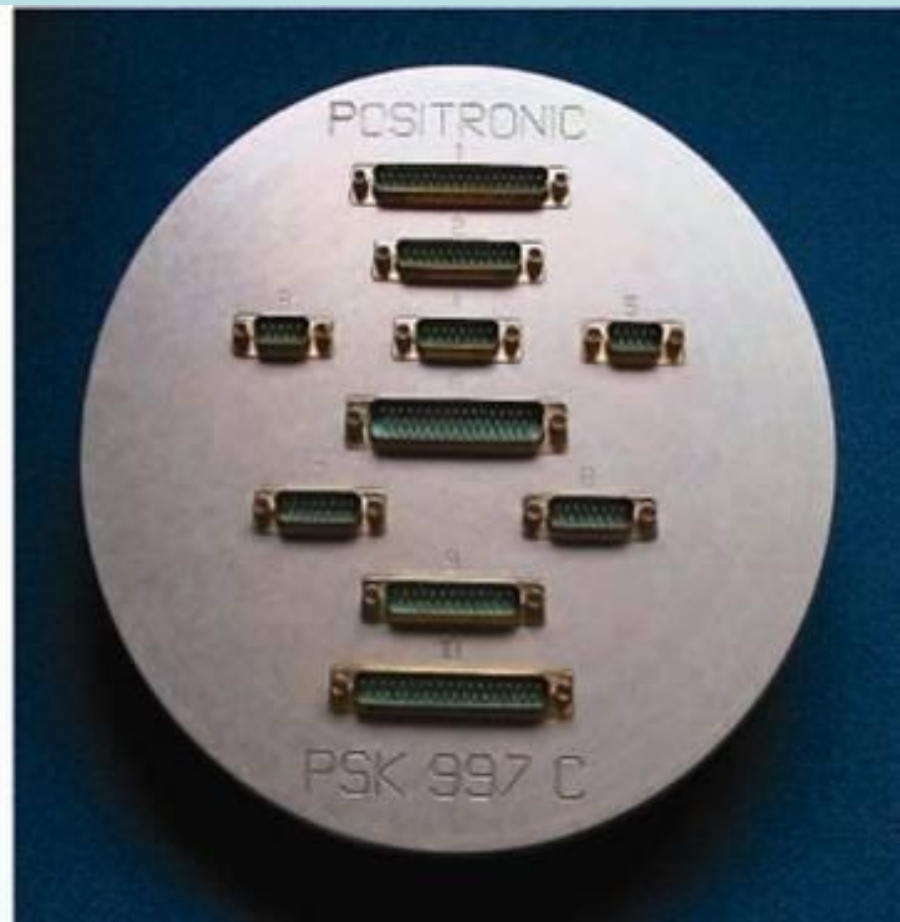
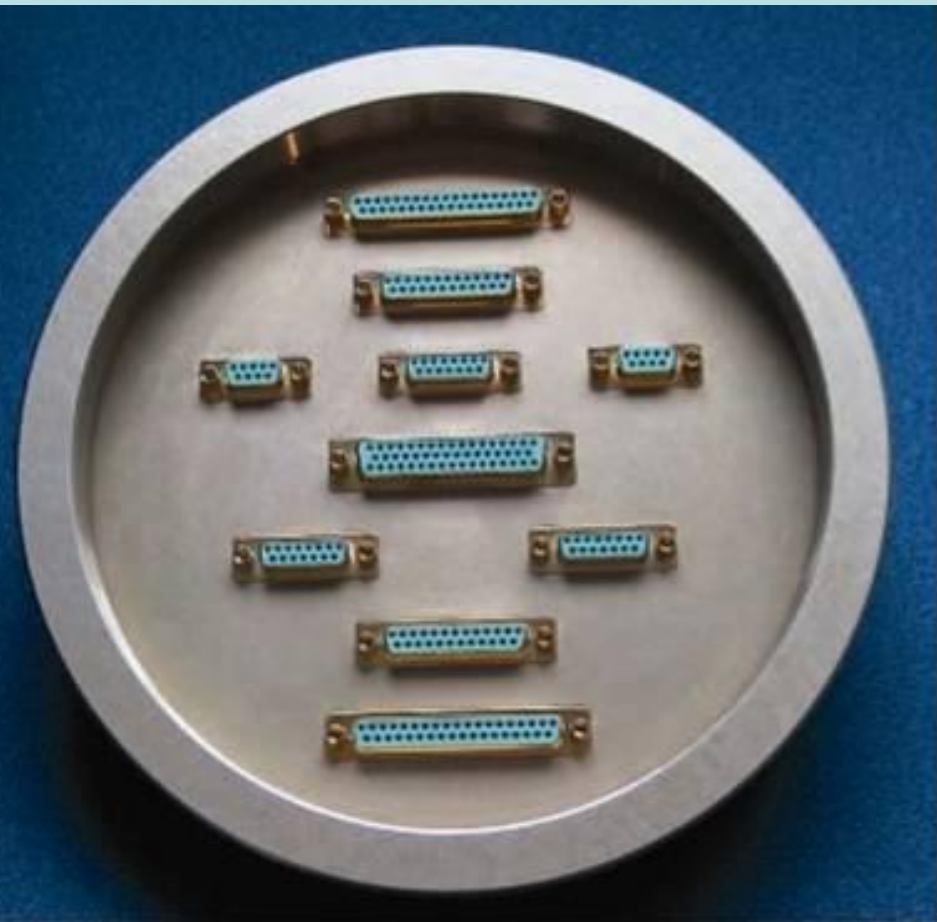


CUSTOM DESIGN 客户设计

- **FLANGES WITH SAVAC OR HIVAC** 配
以 SAVAC 或 HIVAC 法兰

- **FLANGE WITH THE CONNECTORS
DIRECTLY SEALED IN THE FLANGE** 带有连接
器并直接密封在法兰上的法兰。





CUSTOM DESIGN

- **FLANGES WITH SAVAC OR HIVAC**配

以SAVAC 或HIVAC法兰

- **FLANGE WITH THE CONNECTORS**

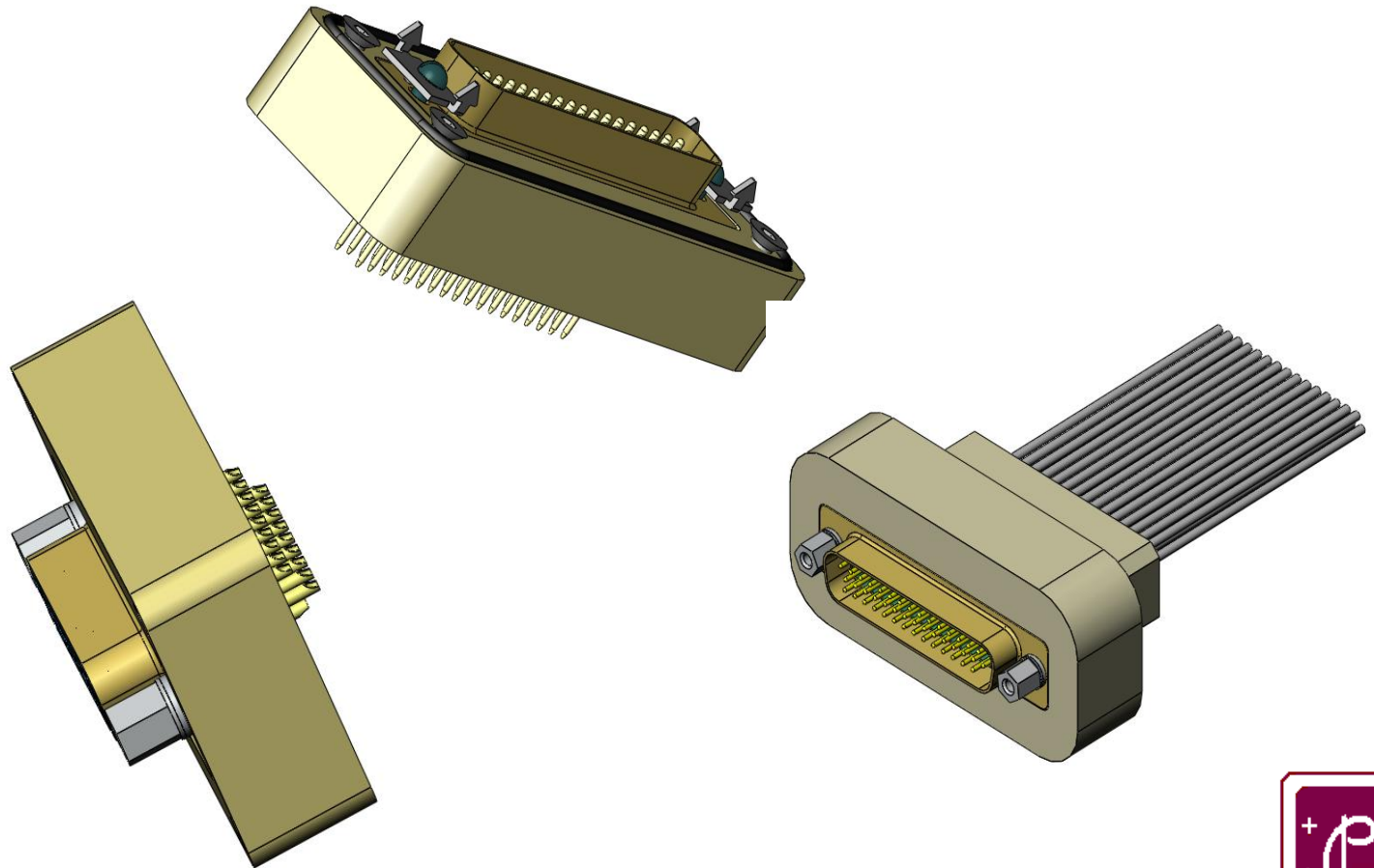
DIRECTLY SEALED IN THE FLANGE配以连接

器并直接密封在法兰上。

- **CONNECTORS**连接器



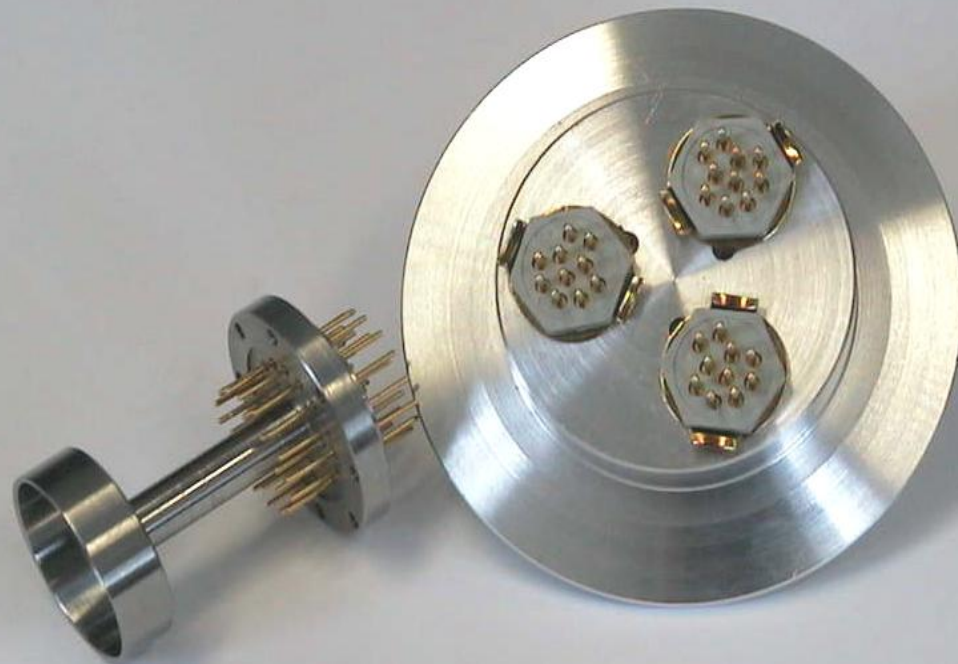
We propose a complete range of hermetic connectors equipped with one standard D-Sub and on the other side with solders, straight, right angle contacts or wired contacts. 我们建议所采用的所有密封连接器均配以标准的D-SUB形式，另一端则采用焊锡、直头、直角或有线连接。

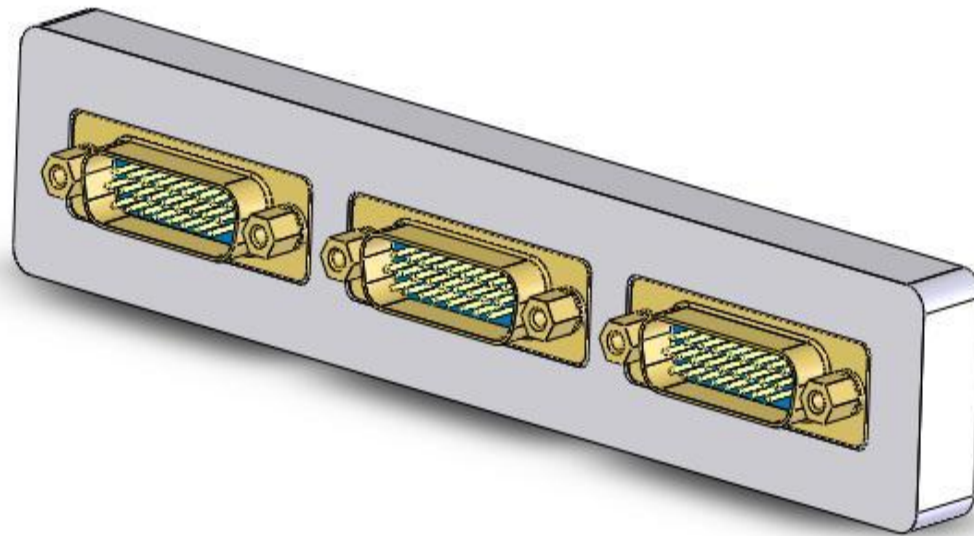


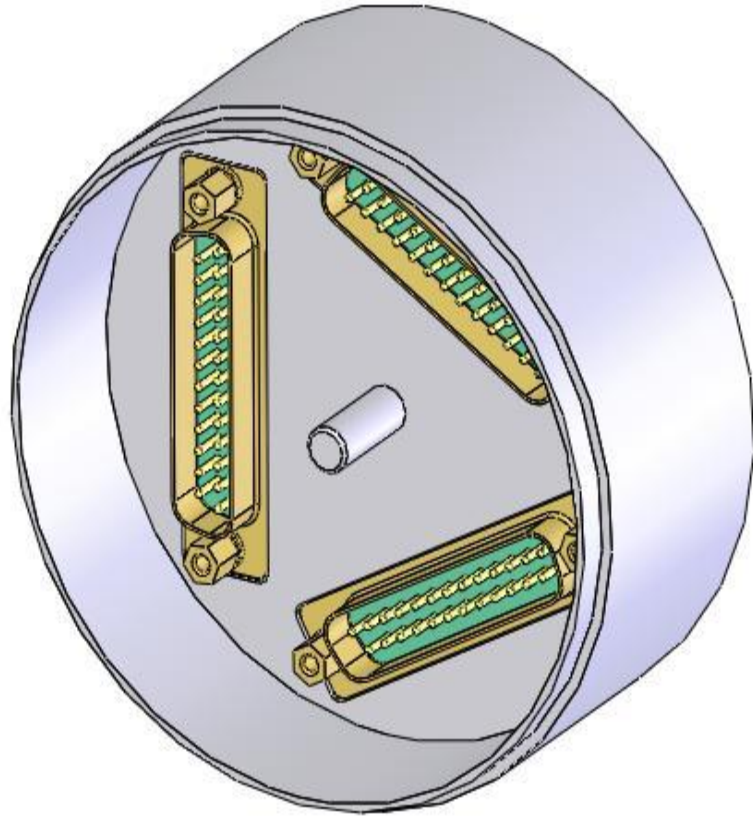
CUSTOM DESIGN

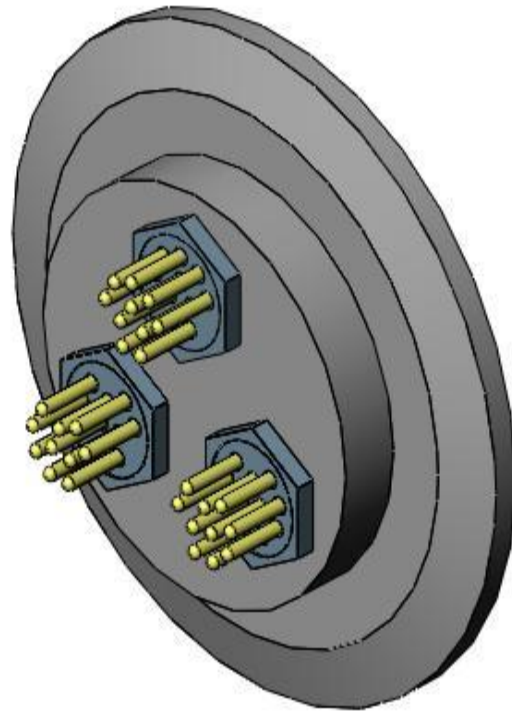
- **FLANGES WITH SAVAC OR HIVAC** 配以 SAVAC 或 HIVAC 法兰
- **FLANGE WITH THE CONNECTORS DIRECTLY SEALED IN THE FLANGE** 配以连接器并直接密封在法兰上。
- **CONNECTORS** 连接器
- **SPECIAL REQUIREMENT** 特殊设备

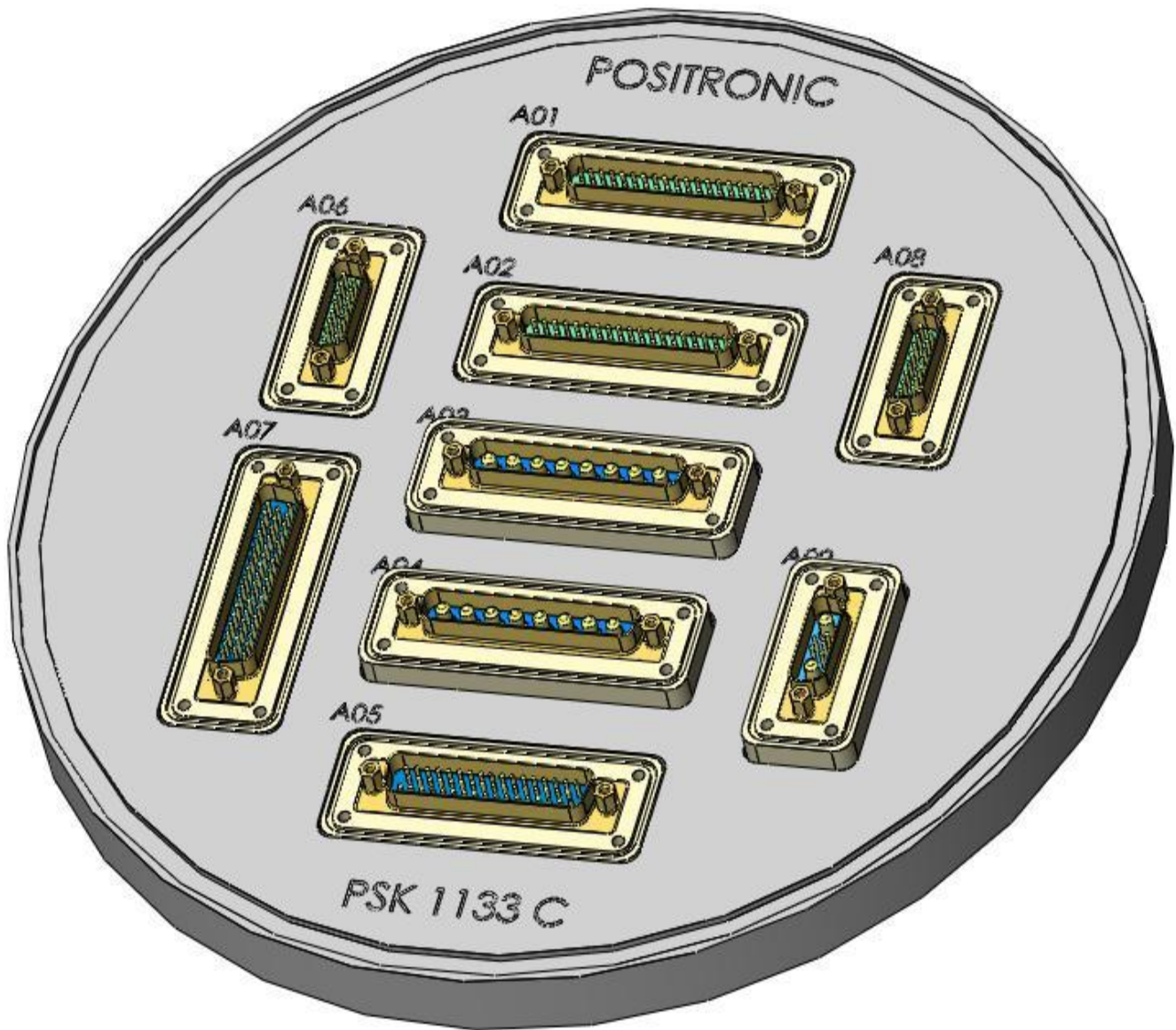












POSITRONIC

A01

A06

A02

A08

A07

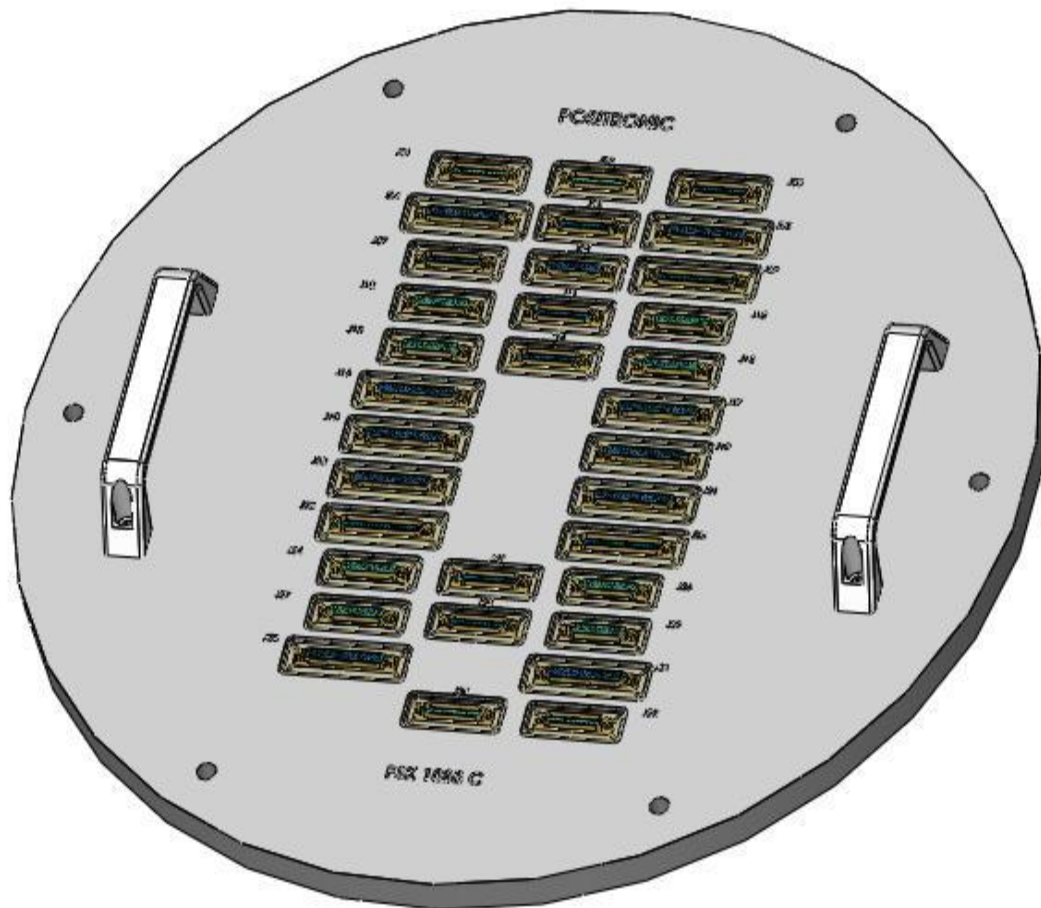
A03

A04

A05

A05

PSK 1133 C



CUSTOM DESIGN 客户设计

- **FLANGES WITH SAVAC OR HIVAC** 配以 SAVAC 或 HIVAC 的法兰
- **FLANGE WITH THE CONNECTORS DIRECTLY SEALED IN THE FLANGE** 配以连接器并直接密封在法兰上。
- **CONNECTORS** 连接器
- **SPECIAL REQUIREMENT** 特殊设备

WE MANUFACTURE ALL THE CONFIGURATION THE CUSTOMER NEEDS AND WE SEND HIM A DRAWING WITH THE PROPOSAL 我们可以依客户之要求生产各式结构的产品，并呈送图纸及相关建议。



**OUR TESTING EQUIPMENT IS A
VACUUM PUMP FROM
LEYBOLD REF L200+**

我们的测试设备是来自于
LEYBOLD的真空泵

- Pumping : primary = 25 m³/h
- Pressure in the measuring cell = 1000 m.bar
- Measuring range : < 10.10⁻¹²mbar.l.s
- Helium concentration : Hand pistol distribution

FIELD OF APPLICATIONS应用领域

Let's look at the field of applications.

We can split the field of applications in two main categories. 两大部分:

- INDUSTRIAL工业用

-VACUUM METALLISING

真空金属化处理

In the industrial categories we will find the vacuum metallising process like on a headlight or glasse frames 在工业领域上我们可以在头灯或**结构的生產中看到真空金属化处理。



- **VACUUM METALLISING**真空金属化处理
- **THIN FILM**薄的膜

Like a production of CD比如CD的生产



- **VACUUM METALLISING**真空金属化处理

- **THIN FILM**薄的膜

- **INDUSTRIAL VACUUM**工业真空

Like packaging or sterilisation in food industries 比如食品工业中的包装及消毒



- **VACUUM METALLISING**真空金属处理
- **THIN FILM**薄的膜
- **INDUSTRIAL VACUUM**工业真空
- **ELECTRONIC MATERIAL AND PROCESSING**电子材料及处理

Production of semi conductors 半导体的生产



- **VACUUM METALLISING**真空金属化处理
- **THIN FILM**薄的膜
- **INDUSTRIAL VACUUM**工业真空
- **ELECTRONIC MATERIAL AND PROCESSING**电子材料及加工
- **MEDICAL EQUIPMENT**医疗设备

In this kind of application, MRI, we made a special feedthrough for smaller equipment for Research在医疗应用中，核磁共振，我们为小型设备提供特制的贯通/连接器以供研究。



- **VACUUM METALLISING**
- **THIN FILM**
- **INDUSTRIAL VACUUM**
- **ELECTRONIC MATERIAL AND PROCESSING**
- **MEDICAL EQUIPMENT**
- **MILITARY APPLICATIONS** 军事应用

They need vacuum in lots of equipments : missiles, interferometer, IFF system , laser etc.... 他们在很多设备或领域中要用到真空状态，如导弹、干涉器、IFF系统、激光等



FIELD OF APPLICATIONS应用领域

Let's look at the field of applications.

We can split the field of applications in two main categories.

- INDUSTRIAL

- SCIENTIFIC AND SPACE科学研究及
空间开发

-SPACE SIMULATION

-空间模拟

It 's necessary to test all the equipment of the satellite before it is integrated to the satellite and that it is in vacuum conditions.卫星上的设备在装上卫星之前需要经过测试，当然这些都是在真空状态下进行的。

We made lots of flanges equipped with our XAVAC for all the space manufacturer in Europe like ALCATEL ASTRIUM DASA CASA and so forth.我们为欧洲多家太空设备制造商提供了许多带有我们XAVAX系产品的法兰。



- SPACE SIMULATION 空间模拟

**- ON BOARD SPACE EQUIPMENT板
插式空间设备**

We delivered special feedthrough and connectors for the International Space Station. 我们向国际空间站提供了特殊的贯通连接器。



- **SPACE SIMULATION**空间模拟
- **ON BOARD SPACE EQUIPMENT**插板式空间设备
- **FONDAMENTAL RESEARCH**基础研究

Particle accelerators , nuclear research, biochemical science in State laboratories or universities.还有，被应用于国内外质子加速器、原子能研究、生物化学技术等领域。



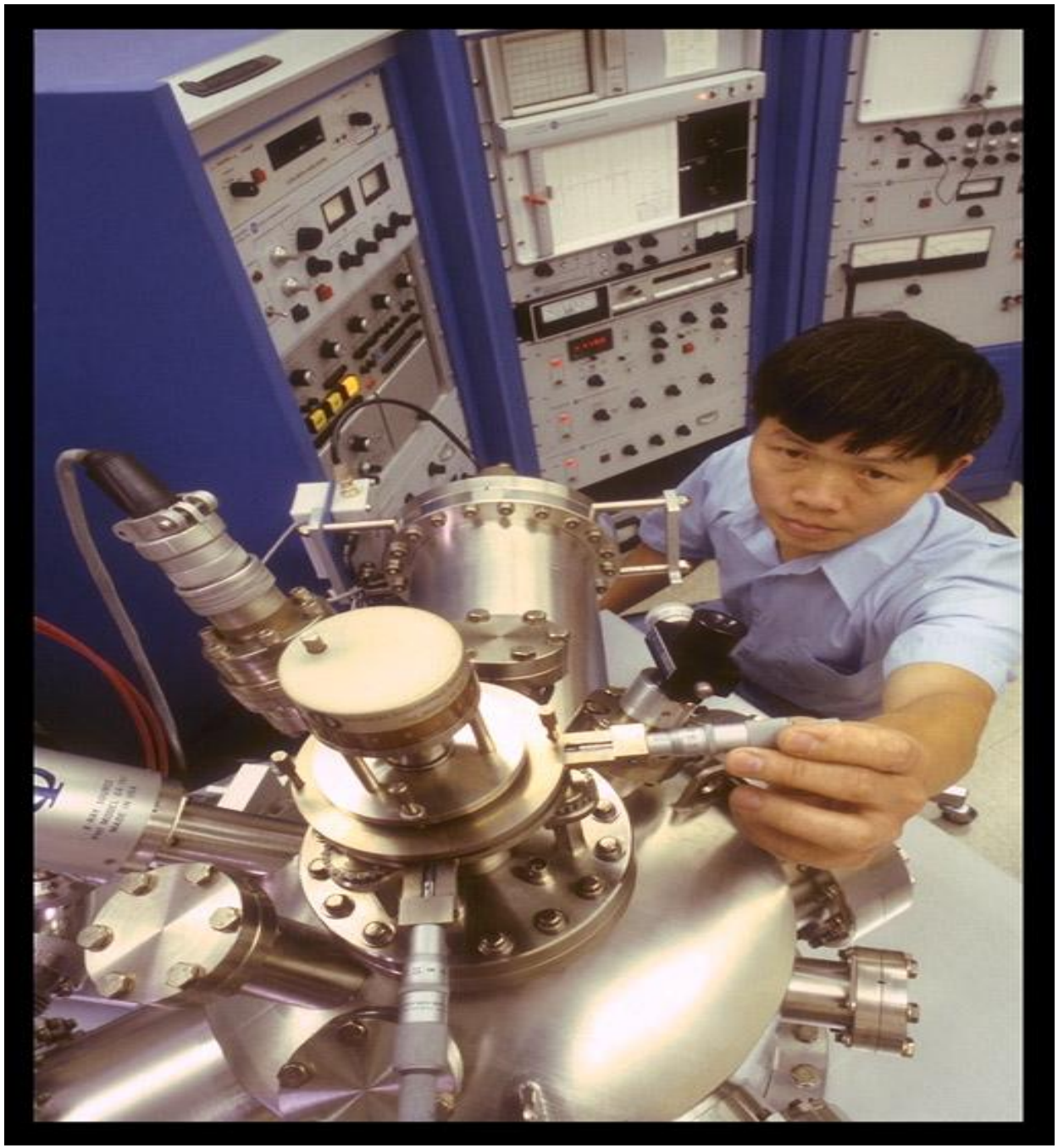
- SPACE SIMULATION空间模拟

-ON BOARD SPACE EQUIPMENT

板插式空间设备

-FONDAMENTAL RESEARCH基础研究

- CRYOGENY低温学



YOU CAN SEE NOW THE LARGE FIELD OF APPLICATIONS FOR THE HERMETIC FEEDTHROUGH OR CONNECTORS BY POSITRONIC.至此，相信您可以了解我们的产品 在密封领域有多么广阔的应用领域。

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