

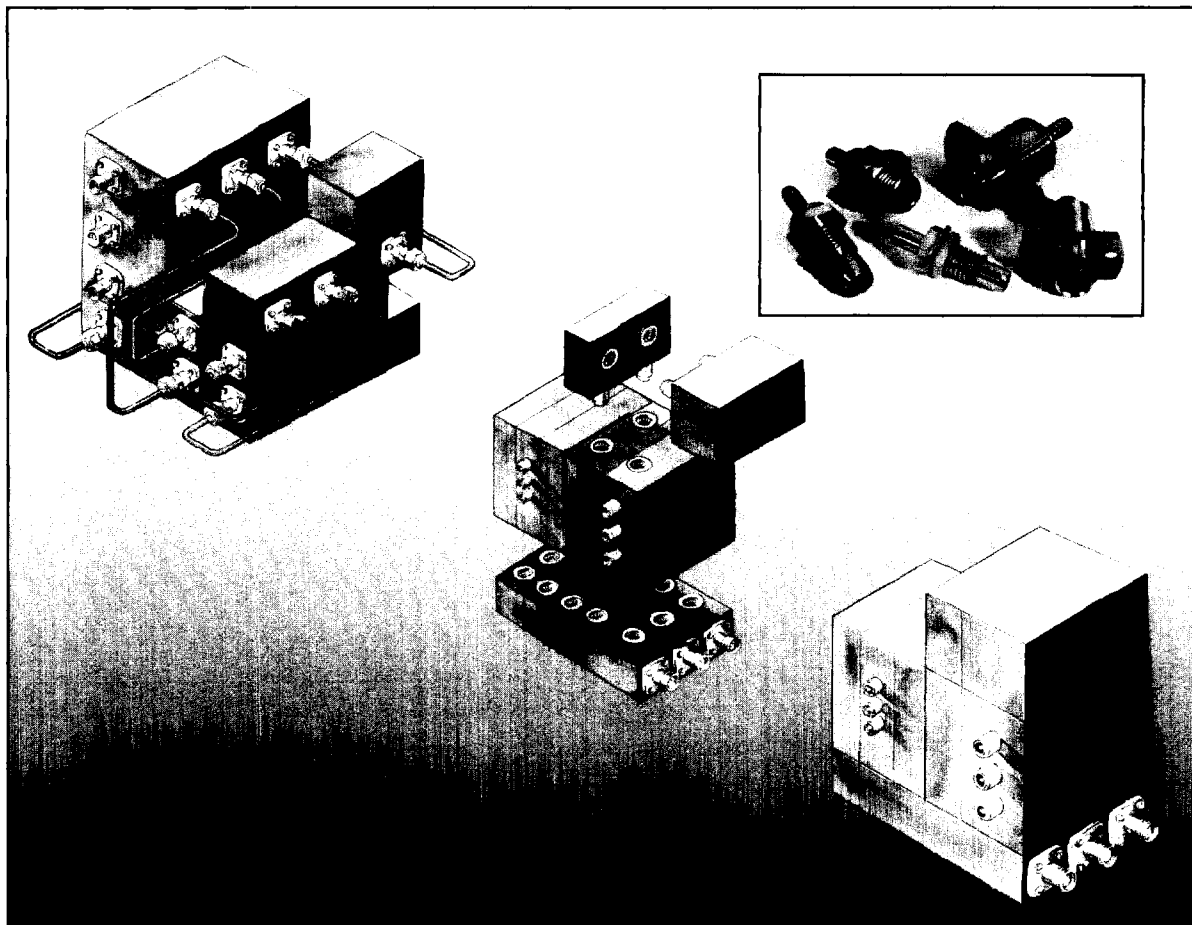


Table of Contents

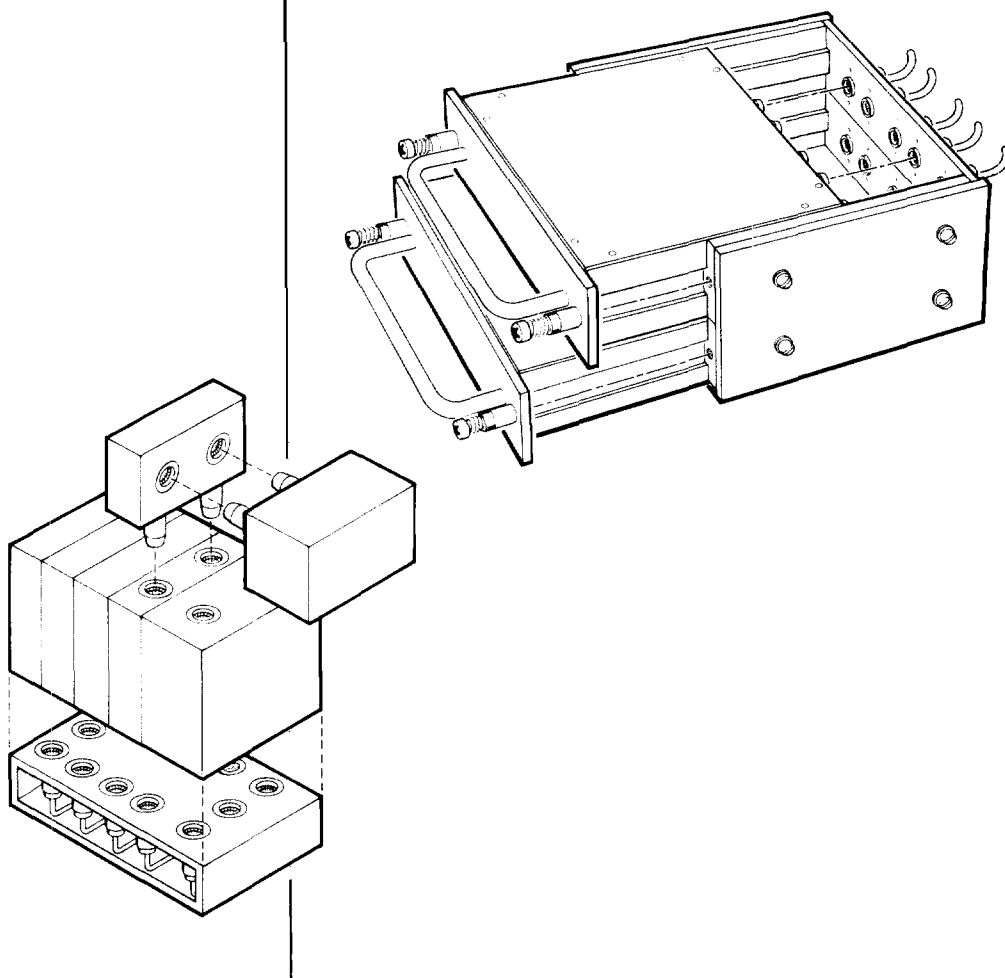
OSP and OSSP Technology and Applications	97	OSSP Interface Mating Dimensions	119
OSP Interface Mating Dimensions	104	Specifications	120
Specifications	105	Semi-Rigid Cable Type	121
Semi-Rigid Cable Type	106	.085 Diameter - Direct Solder Attachment	
.085 and .141 Diameter - Direct Solder Attachment		Flexible Cable Type	122
.085 and .141 Diameter - OSCC Solderless		Crimp Attachment	
Compression Crimp Attachment		Panel Mount Receptacle	123
Flexible Cable Type	109	Straight Terminal	
Crimp Attachment		Hermetically Sealed Type	124
Panel Mount Receptacle	110	Calibration Kit	125
Straight Terminal			
Printed Circuit Board			
Stripline Transmission Line Type	113		
Surface Launch			
Hermetically Sealed Type	114		
Calibration Kits	118		

Technology and Applications

OSP blind mate connectors from M/A-COM can be used to solve a wide variety of RF and microwave interconnect problems. When using OSP blind mates, careful consideration must be given to choosing the right connectors for the application and in specifying such mounting features as:

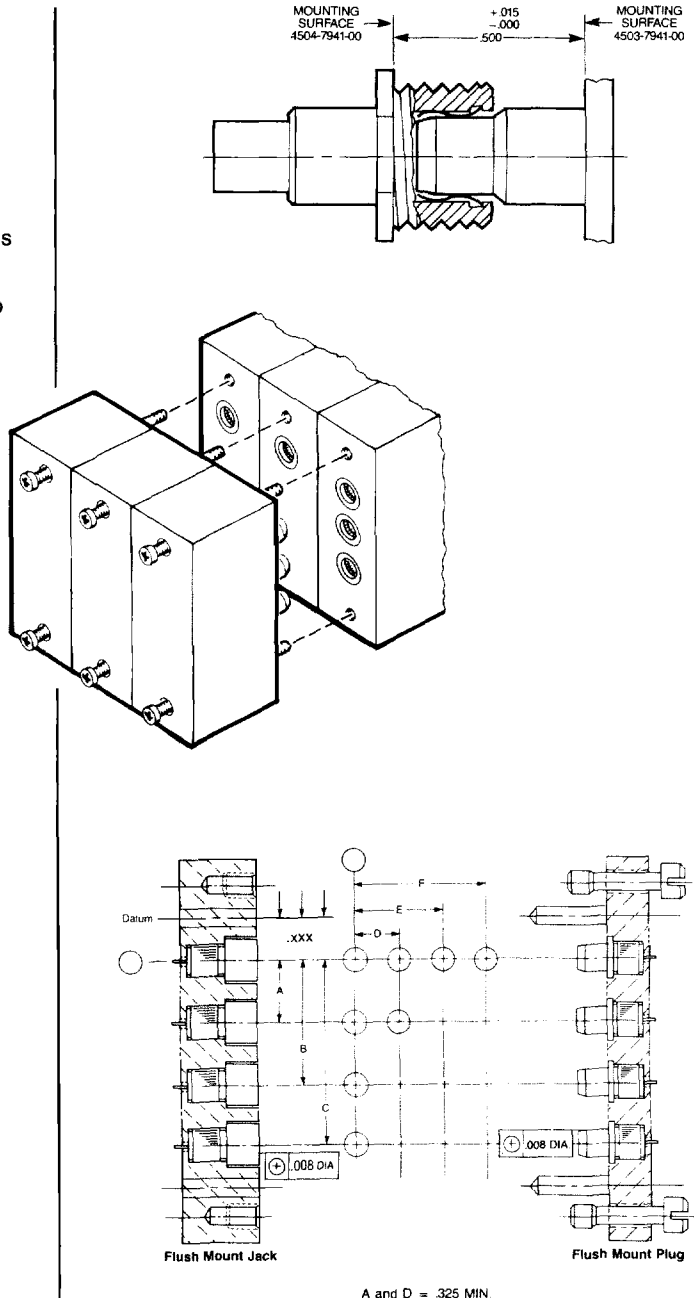
- Connector-to-connector fixed and float tolerances
- Mating forces and float mount spring loading
- Connector density in multiple connector arrays
- Panel deflection

The following section is intended to be a design aide for many typical applications and to help get optimum performance out of OSP and OSSP blind mate connectors. M/A-COM design and applications engineering group is always available to assist the designer during the development phase.



Module to Module Module to Motherboard

For applications such as modularized MIC to MIC packages, rigid mount hermetic and non-hermetic OSP connectors are recommended because space is usually at a premium and relatively tight tolerances can be held. In using rigid mount OSP connectors, the axial and radial float tolerance of the OSP interface is used to accommodate misalignment. Tolerance considerations for an array of rigid mount OSP's is illustrated below. Also shown is a typical method of interlocking modules using jack screws.



Misalignment Tolerances

Axial:

The OSP and OSSP blind mate interfaces can accommodate axial misalignment. The recommended design limits and maximum allowable separation for each type are given in the following table:

Interface	Maximum Separation	Recommended Design Limit
OSP	.030	.015
OSSP	.020	.010

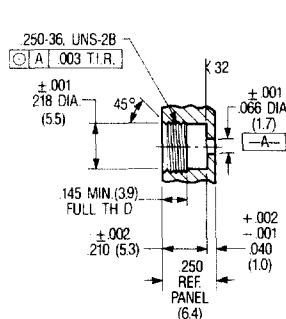
Radial:

Fixed mount blind mates can tolerate a certain degree of radial misalignment without electrical or mechanical performance degradation. The following table gives the design limits for each connector type:

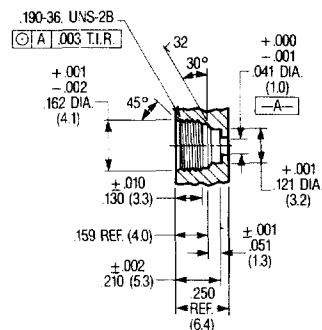
Interface	True Position Mounting Hole Centerline Tolerance	Total Connector Misalignment*
OSP	.003	.008
OSSP	.002	.0040

*Per mated pair in any direction

Hermetic Mounting Detail



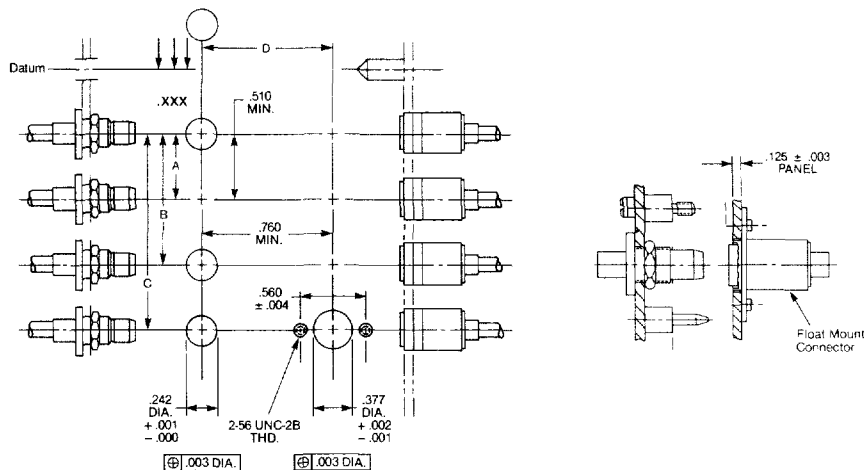
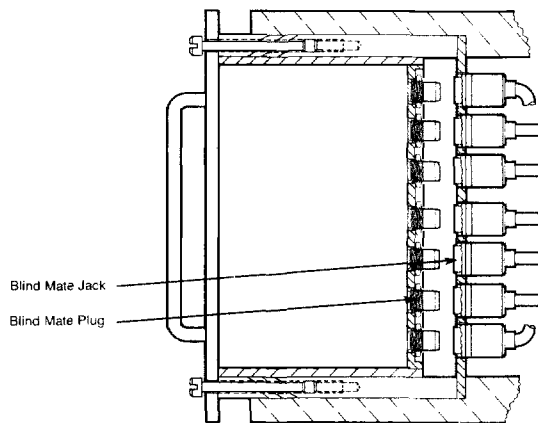
OSP Plug Launcher



OSSP Plug Launcher

Rack and Panel Module to Motherboard

Many multiple mate applications, such as rack and panel, require a large amount of axial and radial misalignment tolerance. The OSP and OSSP float mount jack connectors are ideally suited for these situations since they have an external float mechanism in addition to the normal misalignment tolerance of the blind mate interface.



Misalignment Tolerances

Axial:

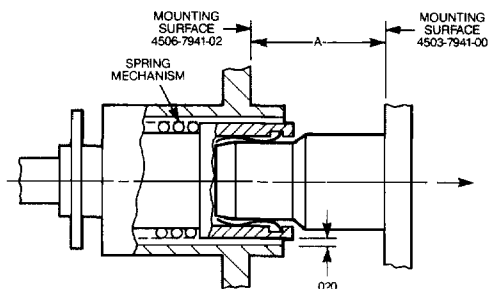
The float mount design can accommodate a maximum of .050 inch of longitudinal misalignment (mounting surface to mounting surface) as long as a .010 inch minimum preload condition is met.

Radial:

The floating connector will accommodate ±.020 radial misalignment with mounting hole centerline dimensioned from a pre-designated datum of $\text{Ⓢ} \text{.006 DIA.}$. The radial tolerance accommodates mating package misalignment and mounting hole tolerance.

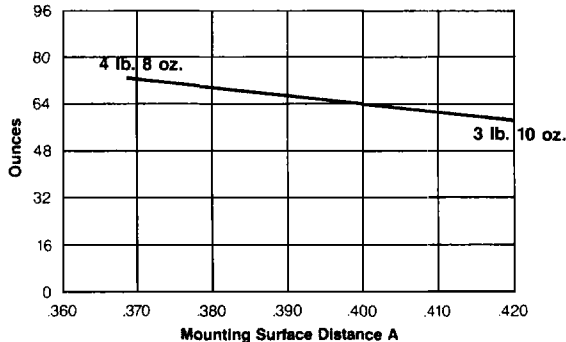
The float mounted OSP and OSSP connectors introduce some new design aspects which must be considered at the development stage in order to take full advantage of the float features.

Spring Load Forces



Misalignment tolerance is obtained from a spring mechanism which separates the connector interface from the flange housing and allows it to float. As the springs work to align mating connectors, the forces are transmitted to the mounting panel. The force generated by several connectors can be considerable under extreme mismatch conditions and could cause bowing of the mounting panels if they are not supported properly. Typical forces on a mated pair at extremes is illustrated below.

Spring Load Force*



*Consult factory for designs with greater spring force.

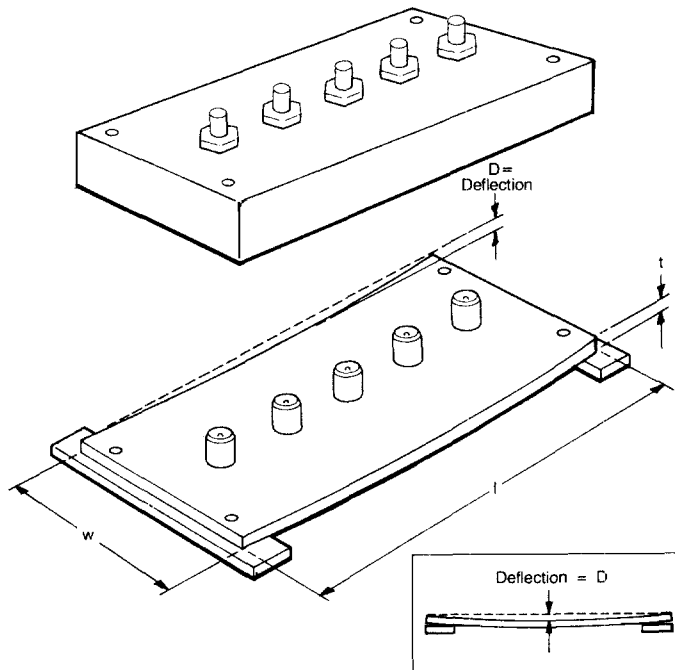
Recommended Preload:

When using connectors as depicted above, it is necessary that the connector mounting surface "A" be .419 maximum. Consult factory for other connector combinations.

Cables

OSP blind mate connectors are available in both flexible and semi-rigid cable types. If an application requires semi-rigid cable it is recommended that a service loop be used to facilitate the float features of the connector.

When mounting several OSP or OSSP blind mate connectors on a plate or panel, such as in a module-to-motherboard or rack and panel application, the design must take into account the interface mating forces to engage the connectors, and the spring preload forces in floating mount cases. If this is not done, distortion of mounting plates and panels can occur which will prevent proper mating of the connectors and degrade performance. A technique that can be used to approximate the amount of distortion or bowing is to consider the panel as a beam under deflection. Two typical examples using float and fixed mount OSP's on aluminum panels are given.



Reference Data:

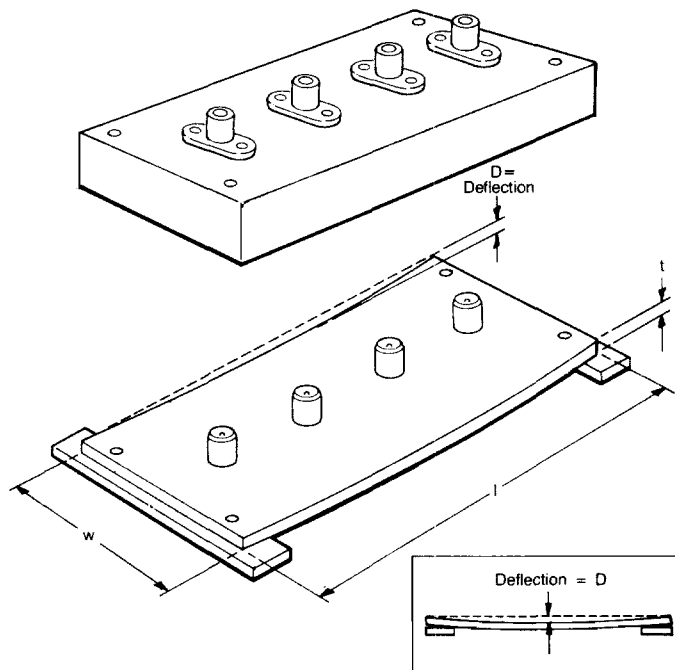
Material:	6061T6 Aluminum
Modulus of Elasticity:	$E = 10 \times 10^6$ PSI
Ultimate Strength:	$U = 45,000$ PSI
Yield Strength:	$S = 40,000$ PSI
Deflection:	$D = \frac{F l^3}{384 E I}$ in inches
Moment of a Beam:	$I = \frac{w t^3}{12}$

Fixed Mount Connector Example:

- 5 fixed mount OSPs with 2.5 lbs. mating for each ($F = 12.5$ lbs.)
- Aluminum mounting plate 6061T6
.090 inch thick (t) X .750 inch wide (w) X 3.00 inch long (l)

$$I = \frac{(.75)(.09)^3}{12} = 4.56 \times 10^{-5} \text{ inch}^4$$

$$D = \frac{(12.5)(3.00)^3}{(384)(10 \times 10^6)(4.56 \times 10^{-5})} = .0019 \text{ inch}$$



Reference Data:

Material:	6061T6 Aluminum
Modulus of Elasticity:	$E = 10 \times 10^6$ PSI
Ultimate Strength:	$U = 45,000$ PSI
Yield Strength:	$S = 40,000$ PSI
Deflection:	$D = \frac{Fl^3}{384 EI}$ in inches
Moment of a Beam:	$I = \frac{wt^3}{12}$

Float Mount Connector Example:

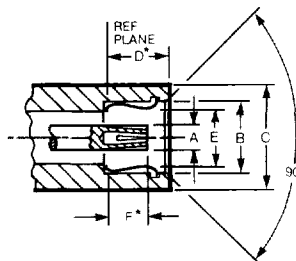
- 4 float mount OSPs with a maximum compressive load of 4 lbs., 8 oz. each ($F = 18$ lbs.)
- Aluminum mounting plate 6061T6
.090 inch thick (t) X .750 inch wide (w) x 2.00 inch long (l)

$$I = 4.56 \times 10^{-5} \text{ inch}^4$$

$$D = \frac{(18)(2.00)^3}{(384)(10 \times 10^6)(4.56 \times 10^{-5})} = .00082 \text{ inch}$$

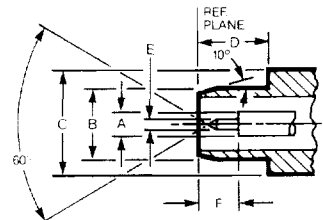
The connector interface, specifically designed for multiple interconnects, maintains reliable performance over the typical mechanical tolerance required in cost effective packaging.

The interface test data shows excellent performance is maintained with mating gaps up to .015 inch.



JACK

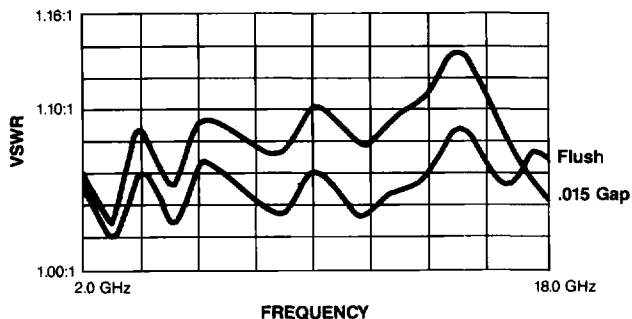
Letter	Inches (Millimeters)
A	.070 (1.78) Nom.
B	.225 (5.72) Min.
C	.300 (7.62) Ref.
D	.197 (5.00) Nom. *
E	.200 (5.08) Max.
F	.127 (3.23) Max. *



PLUG

Letter	Inches (Millimeters)
A	.070 (1.78) Nom.
B	.210 (5.33) Nom.
C	.300 (7.62) Ref.
D	.199 (5.05) Min.
E	.036 (0.91) Nom.
F	.128 (3.25) Min.

*With spring bottomed.
Metric equivalents (to the nearest 0.01mm) are given for general information only.



The specifications given refer specifically to mated pair of Part Number 4504-7941-00 and 4503-7941-00 (RG-402) and 4504-7985-00 and 4503-7985-00 (RG-405). Specifications on other connectors are available from the company on request.

The general electrical, mechanical and environmental specifications in the following table are recommended for procurement documents or drawings.

Engineering Data

Impedance: 50 ohms
Frequency: dc to 22.0 GHz
Temperature Rating: -65° to +125° C

Electrical

	RG 402 (.141) Semi-Rigid	RG 405 (.085) Semi-Rigid
VSWR:		
dc - 18.0 GHz	1.02 + .005f (GHz)	1.05 + .005f (GHz)
18.0 - 22.0 GHz	1.02 + .008f (GHz)	1.05 + .009f (GHz)
RF Transmission Loss:	.03x√f (GHz)	.03x√f (GHz)
Insulation Resistance:	5,000 megohms min.	5,000 megohms min.
Contact Resistance:		
Center Contact:	2.0 milliohms max.	2.0 milliohms max.
Outer Contact:	2.0 milliohms max.	2.0 milliohms max.
Outer Contact to Cable:	0.5 milliohms max.	0.5 milliohms max.
Dielectric Withstanding Voltage:	1500 volts RMS	1000 volts RMS
Corona Extinction Voltage at 70,000 Ft.:	375 volts min.	335 volts min.
RF High Potential at 5 MHz:	1,000 volts RMS	670 volts RMS
RF Leakage Interface Only:	~ (90-fGHz) dB min. (fully mated)	~ (90-fGHz) dB min. (fully mated)
Power Handling:	300W at 3 GHz (sea level) and room temperature	

Environmental

Corrosion: Method 101, Condition B, MIL-STD-202
Vibration: Method 204, Condition D, 20G's, MIL-STD-202
Shock: Method 213, Condition I, 100G's, MIL-STD-202
Temperature Cycling: Method 107, Condition B, MIL-STD-202
Moisture Resistance: Method 106, MIL-STD-202

Material

Housing: Corrosion resistant steel Type 303 (stainless) per ASTM A484 and A582
Center Contact: Beryllium copper per ASTM-B-196
Dielectric: TFE fluorocarbon per ASTM-D-1457
Gasket (O'Ring): MIL-P-25732

Mechanical

Force to Engage:	3 pounds max.
Force to Disengage:	1.5 pounds max.
Center Contact Retention:	6 pounds min.
Durability:	5,000 Cycles
Radial Misalignment:	
Rigid Mount:	± .004 inch
Float Mount:	± .020 inch
Mating Characteristics	
Jack Connector:	
Center Contact Socket:	Oversize test Pin: .0372 + .0001 inch dia. Test Pin Finish: 16 micro inch Insertion Depth: .030/.045 Number of Insertions: 3
Insertion Force:	Test Pin: .0370 + .0001 inch dia. Test Pin Finish: 16 micro inch Insertion Depth: .050/.075 Insertion Force: 3 pounds max.
Withdrawal Force:	Test Pin: .0355 - .0001 inch dia. Test Pin Finish: 16 micro inch Insertion Depth: .050/.075 Withdrawal: 1 ounce min.

Finish

Center Contact: Gold plate per MIL-G-45204, Type II, Class 1 over copper plate per MIL-C-14550
Housing: Gold plate per MIL-G-45204, Typ II, Class 0 over nickel plate per QQ-N-290, Class 2 or passivate per ASTM-A380

**All dimensions shown are nominal.
Contact the factory for specific tolerances.**

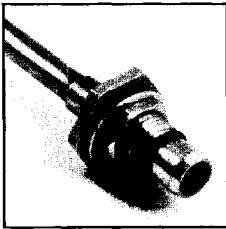


Miniature • Modular Blind Mate Connectors For Semi-Rigid Cable

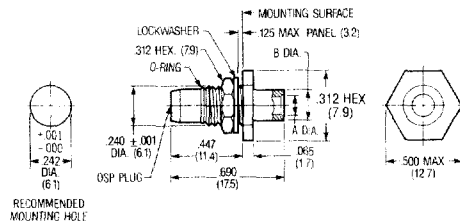
OSP miniature connectors for semi-rigid cable meet high performance requirements for microwave multiple interconnects. Standard units are available in bulkhead or panel mount designs for either direct solder or OSCC solderless compression crimp attachment. Complete tooling for both versions is located in the Tool Section of this catalog.

Jack connectors are available in either float or rigid mount. Rigid mount units will function to specifications up to $\pm .004$ inch (.10mm) radial misalignment with the mating plug connector. Applications requiring greater than $\pm .004$ inch (.10mm) radial misalignment can use either the float design or floating connector plates with guide pins.

.085 and .141 Dia. • Direct Solder Attachment

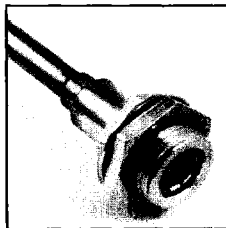


**Bulkhead Feedthrough Cable Plug
Rear Mount**

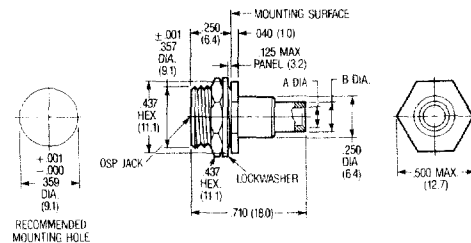


Cable	RG-402/U (.141)	RG-405/U (.085)
Part Number	4503-7941-00	4503-7985-00
DESC Drawing	85072ZSGA	85072ZSGB
Omni Part Number	4503-5022-00	4503-5023-00
Dim. A	Inches (mm) .144 Min. (3.7)	Inches (mm) .089 Min. (2.3)
Dim. B	.180 (4.6)	.120 (3.0)

Finish: Housing that is soldered to cable outer conductor is gold plated. Refer to recommended assembly tools in Tool Section.

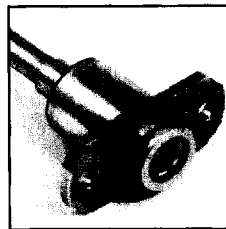


**Bulkhead Feedthrough Cable Jack
Rigid Rear Mount**

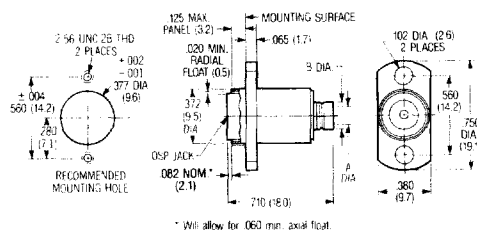


Cable	RG-402/U (.141)	RG-405/U (.085)
Part Number	4504-7941-00	4504-7985-00
Dim. A	Inches (mm) .144 Min. (3.7)	Inches (mm) .089 Min. (2.3)
Dim. B	.180 (4.6)	.120 (3.0)

Finish: Housing that is soldered to cable outer conductor is gold plated. Refer to recommended assembly tools in Tool Section.



**Flange Mount Cable Jack
Floating Rear Mount**



* Will allow for .063 min. axial float.

Cable	RG-402/U (.141)	RG-405/U (.085)
Part Number	4506-7941-02	4506-7985-02
DESC Drawing	85071ZSGA	85071ZSGB
Omni Part Number	4506-5015-02	4506-5016-02
Dim. A	Inches (mm) .144 Min. (3.7)	Inches (mm) .089 Min. (2.3)
Dim. B	.180 (4.6)	.120 (3.0)

Finish: Inner housing that is soldered to cable is gold plated. Outer housing is passivated stainless steel. Refer to recommended assembly tools in Tool Section. When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

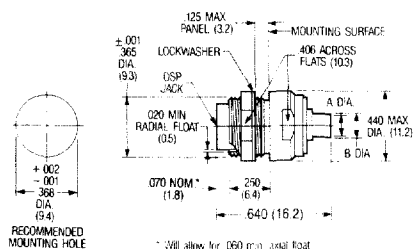


Miniature • Modular Blind Mate Connectors For Semi-Rigid Cable

085 and .141 Dia. • Direct Solder Attachment



Low Profile – Bulkhead Feedthrough Cable Jack – Floating Rear Mount

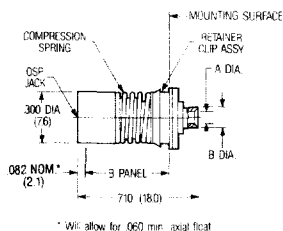


Cable	RG-402/U (.141)	RG-405/U (.085)
Part Number	4522-7941-02	4522-7985-02
Dim. A	Inches (mm) .144 Min. (3.7)	Inches (mm) .089 Min. (2.3)
Dim. B	.180 (4.6)	.120 (3.0)

Finish: Inner housing that is soldered to cable is gold plated. Outer housing is passivated stainless steel.
Refer to recommended assembly tools in Tool Section.
When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.



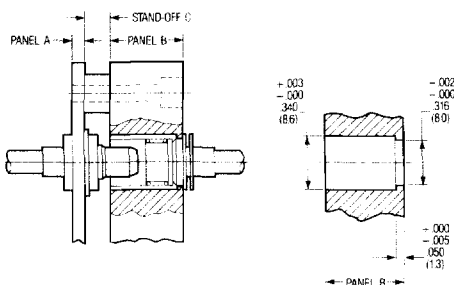
Low Profile – Panel Feedthrough Cable Jack – Floating Rear Mount



Cable	RG-402/U (.141)	RG-405/U (.085)
Part Number	4510-7941-00	4510-7985-00
Dim. A	Inches (mm) .144 Min. (3.7)	Inches (mm) .089 Min. (2.3)
Dim. B	.180 (4.6)	.120 (3.0)

Finish: Housing that is soldered to cable outer conductor is gold plated. Refer to recommended assembly tools in Tool Section.
Recommended removal tool part number 4598-5015-54 is described in Tool Section.
When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

Recommended Mounting Detail

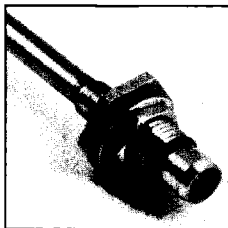


Panel A ±.003	Panel B ±.003	Stand-Off C +.050 -.000
Inches (mm)	Inches (mm)	Inches (mm)
.090 (2.3)	.375 (9.5)	.285 (7.2)
.090 (2.3)	.438 (11.1)	.222 (5.6)
.090 (2.3)	.500 (12.7)	.160 (4.1)
.125 (3.2)	.375 (9.5)	.250 (6.4)
.125 (3.2)	.438 (11.1)	.187 (4.7)
.125 (3.2)	.500 (12.7)	.125 (3.2)

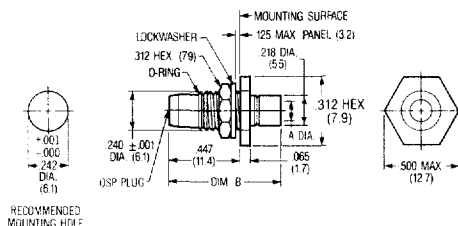
Miniature • Modular Blind Mate Connectors For Semi-Rigid Cable

Ease of assembly permits users unskilled in soldering techniques to rapidly produce cable assemblies with consistently excellent mechanical and electrical performance.

.085 and .141 Dia. • OSCC Solderless Compression Crimp Attachment

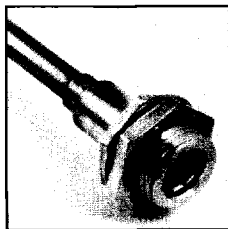


Bulkhead Feedthrough Cable Plug Fixed Rear Mount

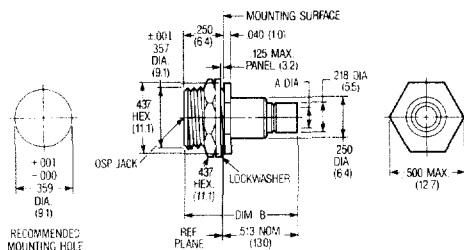


Cable		RG 402/U (.141)	RG 405/U (.085)
Part Number		4503-7641-02	4503-7685-02
Dim. A		Inches (mm) .143 (3.6)	Inches (mm) (.088) (2.2)
Dim. B	Before Crimping	.782 Ref. (19.8)	.782 Ref. (19.8)
	After Crimping	.677 Max. (17.2)	.677 Max. (17.2)

Outline drawing shows after crimp dimensions.
Finish: Passivated stainless steel.
Refer to recommended assembly tools in Tool Section.

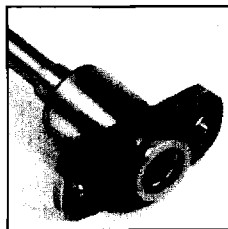


Bulkhead Feedthrough Cable Jack Fixed Rear Mount

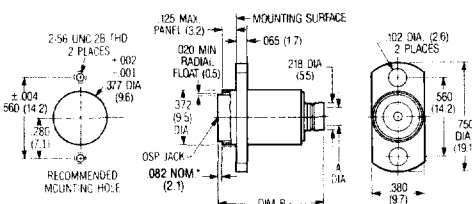


Cable		RG 402/U (.141)	RG 405/U (.085)
Part Number		4504-7641-02	4504-7685-02
Dim. A		Inches (mm) .143 (3.6)	Inches (mm) (.088) (2.2)
Dim. B	Before Crimping	.830 Ref. (21.1)	.830 Ref. (21.1)
	After Crimping	.715 Max. (18.2)	.715 Max. (18.2)

Outline drawing shows after crimp dimensions.
Finish: Passivated stainless steel.
Refer to recommended assembly tools in Tool Section.



Flange Mount Cable Jack Floating Rear Mount



* Will allow for .060 min. axial float.

Cable		RG 402/U (.141)	RG 405/U (.085)
Part Number		4506-7641-02	4506-7685-02
Dim. A		Inches (mm) .143 (3.6)	Inches (mm) (.088) (2.2)
Dim. B	Before Crimping	.891 Ref. (22.6)	.891 Ref. (22.6)
	After Crimping	.780 Max. (19.8)	.780 Max. (19.8)

Outline drawing shows after crimp dimensions.
Finish: Passivated stainless steel.
Refer to recommended assembly tools in Tool Section.
When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

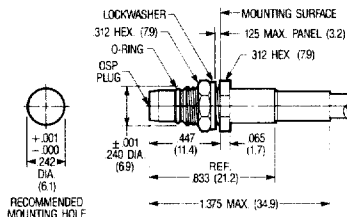


Miniature • Modular Blind Mate Connectors For Flexible Cable

Flexible Cable • Crimp Attachment



**Bulkhead Feedthrough Cable Plug
Rear Mount**

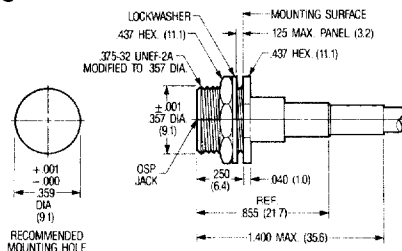


Cable	RG 55/U, 142 223, 400	RG 174/U, 179 187, 188, 316
Part Number	4533-7341-02	4533-7388-02
DESC Drawing Omni	85074ZSGB	85074ZSGA
Part Number	4533-5008-02	4533-5007-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Refer to recommended assembly tools in Tool Section.



**Bulkhead Feedthrough Cable Jack
Rigid Rear Mount**

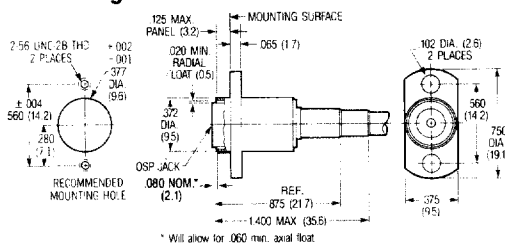


Cable	RG 55/U, 142 223, 400	RG 174/U, 179 187, 188, 316
Part Number	4534-7341-02	4534-7388-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Refer to recommended assembly tools in Tool Section.



**Flange Mount Cable Jack
Floating Rear Mount**

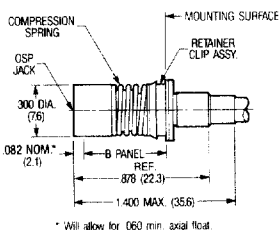


Cable	RG 55/U, 142 223, 400	RG 174/U, 179 187, 188, 316
Part Number	4536-7341-02	4536-7388-02
DESC Drawing Omni	85073ZSGB	85073ZSGA
Part Number	4536-5008-02	4536-5007-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Refer to recommended assembly tools in Tool Section.



**Low Profile - Panel Feedthrough
Cable Jack - Rear Mount**



Cable	RG 55/U, 142 223, 400	RG 174/U, 179 187, 188, 316
Part Number	4540-7341-02	4540-7388-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Refer to recommended assembly tools in Tool Section.
Refer to Recommended Mounting Hole Detail for Semi-Rigid Cable Low Profile Feedthrough Cable Jack.
Recommended removal tool part number 4598-5015-54 is described in Tool Section.

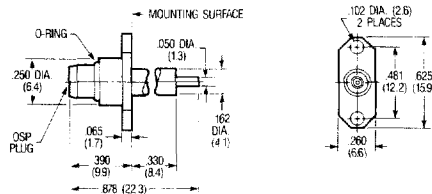


Miniature • Modular Blind Mate Connectors Panel Mount

Straight Terminal

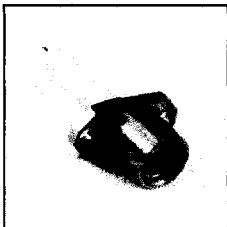


2-Hole Flange Mount Plug Receptacle

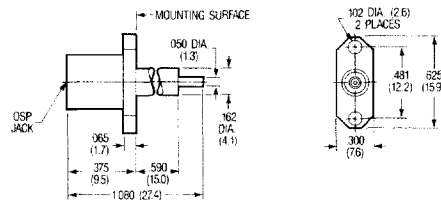


Part Number 4551-1352-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.

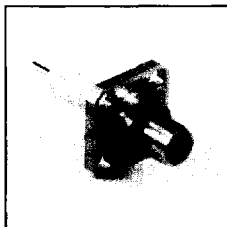


2-Hole Flange Mount Jack Receptacle

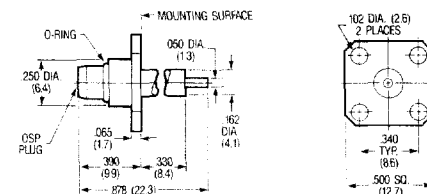


Part Number 4552-1352-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.

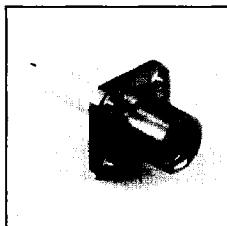


4-Hole Flange Mount Plug Receptacle

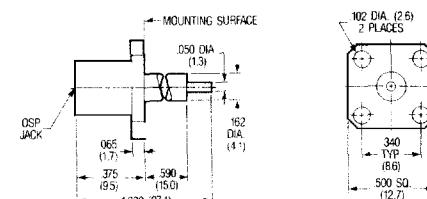


Part Number 4551-1201-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.



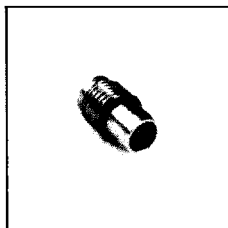
4-Hole Flange Mount Jack Receptacle



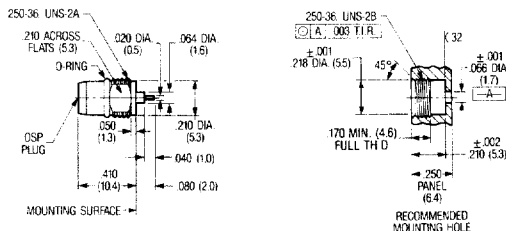
Part Number 4552-1201-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.

Non-Hermetic • Straight Terminal

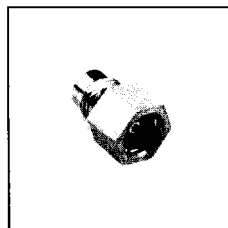


Threaded Installation – Panel Feedthrough Plug Receptacle

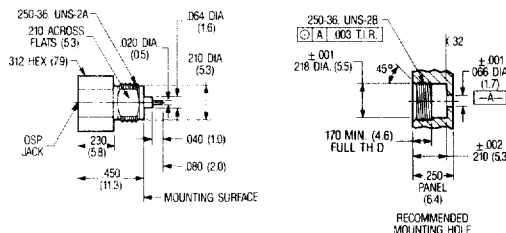


Part Number 4557-5009-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.

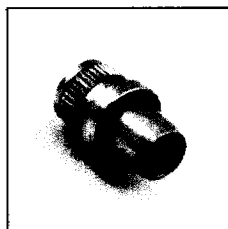


Threaded Installation – Panel Feedthrough Jack Receptacle

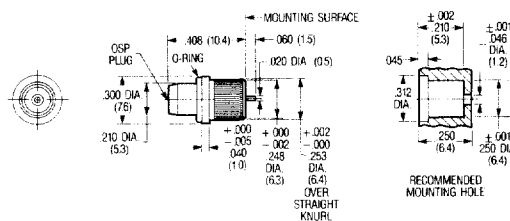


Part Number 4558-5009-02

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.

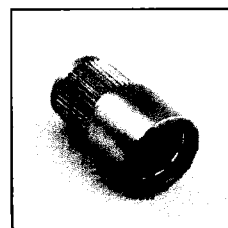


Press-Fit Installation – Panel Feedthrough Plug Receptacle

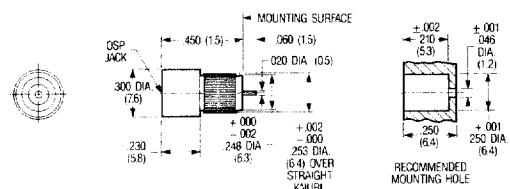


Part Number 4557-1154-02

Finish: Passivated stainless steel.



Press-Fit Installation – Panel Feedthrough Jack Receptacle



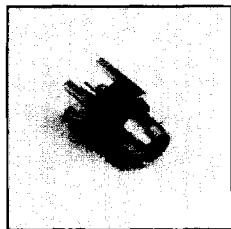
Part Number 4558-1154-02

Finish: Passivated stainless steel.



Miniature • Modular Blind Mate Connectors Panel Mount

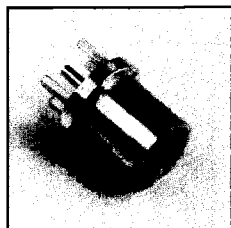
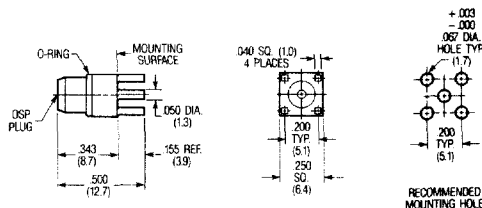
Straight Terminal • Printed Circuit Board



Straight Plug Receptacle – Captured Contact

Part Number 4563-0000-00

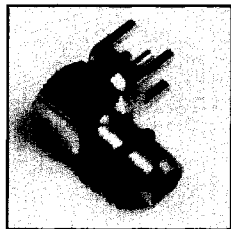
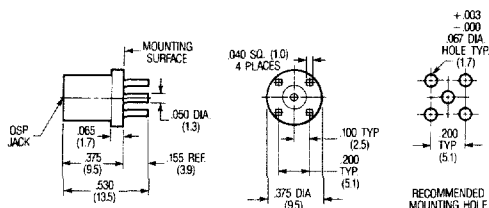
Finish: Gold plate.



Straight Jack Receptacle – Captured Contact

Part Number 4562-0000-00

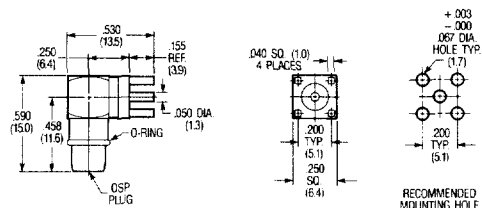
Finish: Gold plate.



Right Angle Plug Receptacle – Captured Contact

Part Number 4565-0000-00

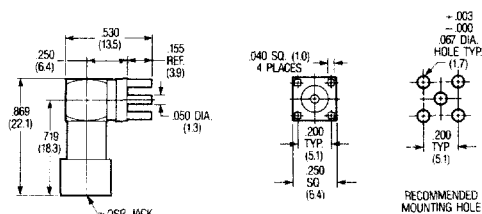
Finish: Gold plate.



Right Angle Jack Receptacle – Captured Contact

Part Number 4564-0000-00

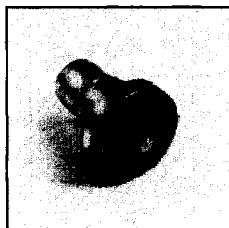
Finish: Gold plate.



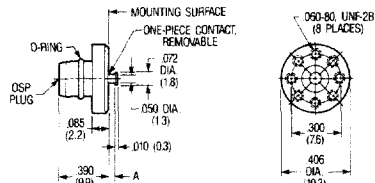


Miniature • Modular Blind Mate Connectors For Stripline Circuits

Surface Launch • Turret Terminal

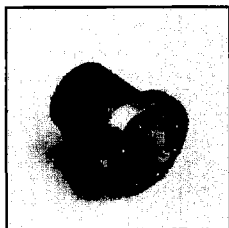


**Surface Launch Plug
Non-Captured Contact**

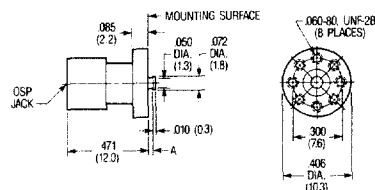


Ground Plane Spacing	1/16	1/8	1/4
Part Number	4567-1321-02	4567-1322-02	4567-1323-02
Dim. A	Inches (mm) .031 (0.8)	Inches (mm) .063 (1.6)	Inches (mm) .125 (3.2)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.



**Surface Launch Jack
Captured Contact**



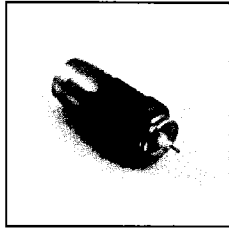
Ground Plane Spacing	1/16	1/8	1/4
Part Number	4566-1321-02	4566-1322-02	4566-1323-02
Dim. A	Inches (mm) .031 (0.8)	Inches (mm) .063 (1.6)	Inches (mm) .125 (3.2)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.

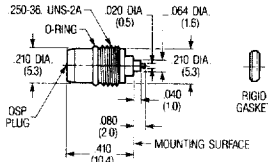


Miniature • Modular Blind Mate Connectors Hermetically Sealed

Metal-To-Metal Hermetic Seal

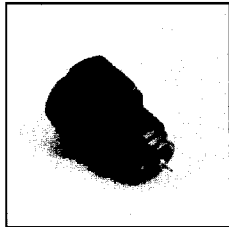


Rigid Gasket Seal – Panel Feedthrough Plug Receptacle

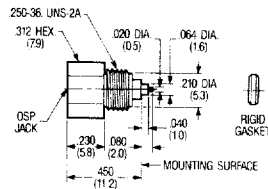


Part Number	4557-5119-02
VSWR (GHz)	1.04 + .009f
RF Leakage (dB)	– (90-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Installation Thermal Limit: 250° C.
Recommended Mounting Hole Detail A follows at end of OSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.



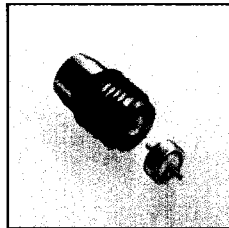
Rigid Gasket Seal – Panel Feedthrough Jack Receptacle



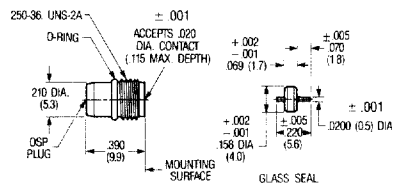
Part Number	4558-5119-02
VSWR (GHz)	1.04 + .009f
RF Leakage (dB)	– (90-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Installation Thermal Limit: 250° C.
Recommended Mounting Hole Detail A follows at end of OSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.

Field Replaceable • Solder and Braze-In Hermetic Seal

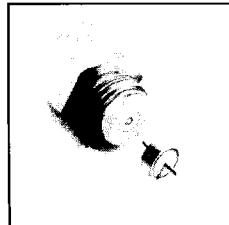


Panel Feedthrough Plug Receptacle

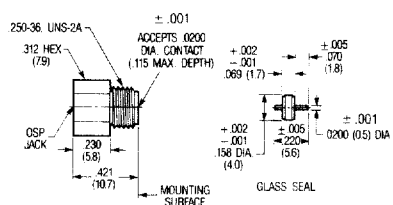


Part Number	4557-5329-02 Connector and Seal	2098-0294-00 Seal Only	4557-5328-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	– (90-fGHz)	– (90-fGHz)	– (90-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail B or E follows at end of OSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.



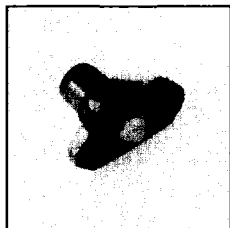
Panel Feedthrough Jack Receptacle



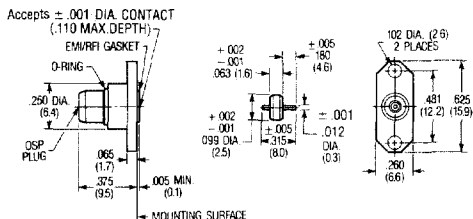
Part Number	4558-5329-02 Connector and Seal	2098-0294-00 Seal Only	4558-5328-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	– (90-fGHz)	– (90-fGHz)	– (90-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail B or E follows at end of OSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.

Field Replaceable • Solder and Braze-In Hermetic Seal

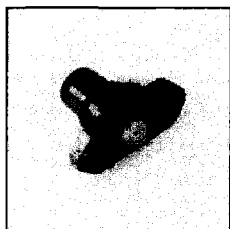


**2-Hole Flange Mount Plug Receptacle
With EMI/RFI Gasket – .012 Dia. Contact**

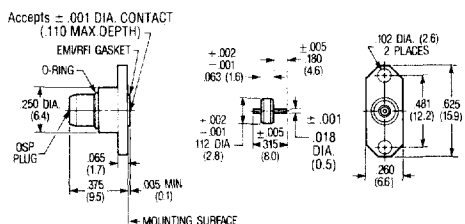


Part Number	4551-3355-02 Connector and Seal	2098-3250-94 Seal Only	4551-3354-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	– (90-fGHz)	– (90-fGHz)	– (90-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail C follows at end of OSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.

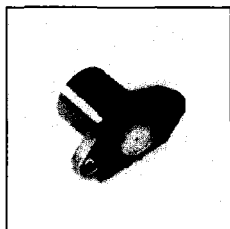


**2-Hole Flange Mount Plug Receptacle
With EMI/RFI Gasket – .018 Dia. Contact**

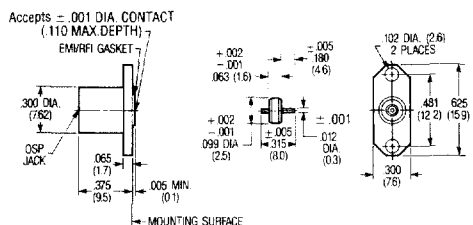


Part Number	4551-3357-02 Connector and Seal	2098-3251-94 Seal Only	4551-3356-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	– (90-fGHz)	– (90-fGHz)	– (90-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail D follows at end of OSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.

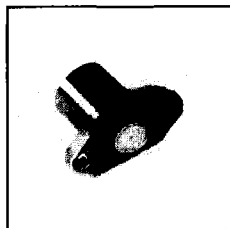


**2-Hole Flange Mount Jack Receptacle
With EMI/RFI Gasket – .012 Dia. Contact**

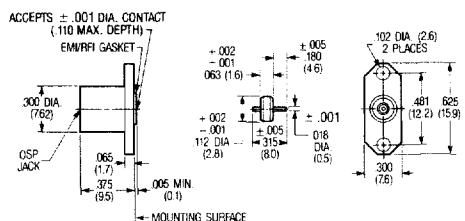


Part Number	4552-3355-02 Connector and Seal	2098-3250-94 Seal Only	4552-3354-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	– (90-fGHz)	– (90-fGHz)	– (90-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail C follows at end of OSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.



**2-Hole Flange Mount Jack Receptacle
With EMI/RFI Gasket – .018 Dia. Contact**



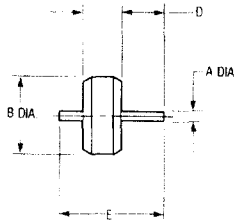
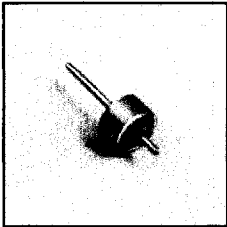
Part Number	4552-3357-02 Connector and Seal	2098-3251-94 Seal Only	4552-3356-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	– (90-fGHz)	– (90-fGHz)	– (90-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail D follows at end of OSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.



Miniature • Modular Blind Mate Connectors
Hermetically Sealed

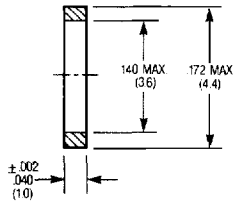
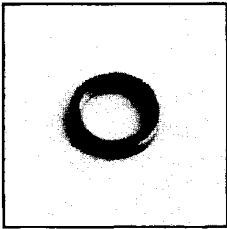
Solder-In Thermally Matched Hermetic Seals



Part Number	2098-3250-94	2098-3251-94	2098-0294-00
A Dim. Nom.	Inches (mm) .012 (0.3)	Inches (mm) .018 (0.5)	Inches (mm) .020 (0.5)
B Dim. $\pm .002$ $-.001$	.099 (2.5)	.112 (2.8)	.158 (4.0)
C Dim. $\pm .002$ $-.001$	.063 (1.6)	.063 (1.6)	.069 (1.7)
D Dim. $\pm .005$	.180 (4.6)	.180 (4.6)	.070 (1.8)
E Dim. $\pm .006$	.315 (8.0)	.315 (8.0)	.220 (5.6)

Consult the factory for additional seals not listed.

EMI/RFI Gasket



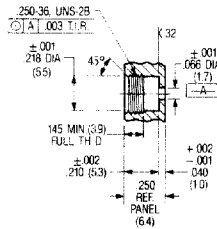
Part Number	2098-3333-54
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Miniature • Modular Blind Mate Connectors Hermetically Sealed

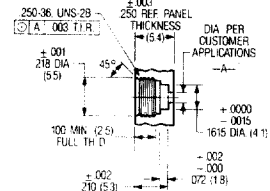
Recommended Mounting Hole Detail

Detail A*

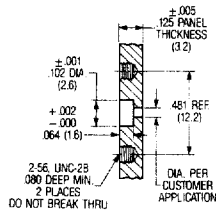


* Consult appropriate Assembly Procedure for complete mounting details.

Detail B* (.250 Panel Thickness)

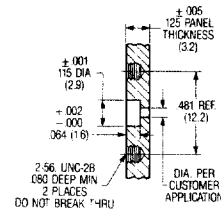


Detail C*

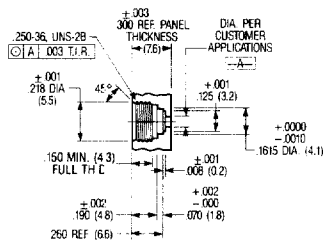


* Consult appropriate Assembly Procedure for complete mounting details.

Detail D*



Detail E*



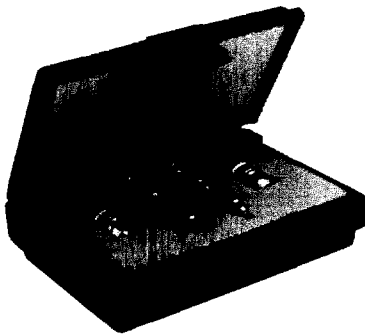
* Consult appropriate Assembly Procedure for complete mounting details.

OSP Miniature Calibration Kit

Part Number **4598-4015-54**

Calibration Kits are designed to be used with most Automatic Network Analyzer (ANA) Systems. It is intended to reduce measurement uncertainties for ANA Systems capable of performing an open/short average for reflection measurements, and test path normalization for transmission measurements. All kits include fixtures and calibration instructions usable with Scalar Network Analyzers.

For calibration kits with sliding load, order part number **4598-4016-54**.



Part Number **4511-6111-00**
OSP Plug Termination
VSWR: dc-18 GHz, 1:10:1



Part Number **4512-6111-00**
OSP Jack Termination
VSWR: dc-18 GHz, 1:10:1



Part Number **4511-1314-00**
OSP Plug Short Circuit Termination



Part Number **4512-1314-00**
OSP Jack Short Circuit Termination



Part Number **4511-1315-00**
OSP Plug Open Circuit Termination



Part Number **4512-1315-00**
OSP Jack Open Circuit Termination



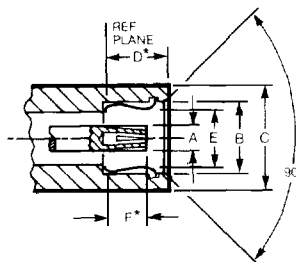
Part Number **4581-2700-05**
OSP Plug to 7mm Adapter



Part Number **4582-2700-05**
OSP Jack to 7mm Adapter

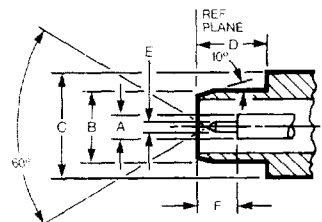
The connector interface, specifically designed for multiple interconnects, maintains reliable performance over the typical mechanical tolerance required in cost effective packaging.

The interface test data shows excellent performance is maintained with mating gaps up to .015 inch.



JACK

Letter	Inches (Millimeters)
A	.048 (1.22) Nom.
B	.154 (3.91) Min.
C	.210 (5.33) Ref.
D	.197 (5.00) Nom.*
E	.132 (3.35) Max.
F	.127 (3.23) Max.*



PLUG

Letter	Inches (Millimeters)
A	.048 (1.22) Nom.
B	.140 (3.56) Nom.
C	.210 (5.33) Ref.
D	.199 (5.00) Min.
E	.020 (0.51) Nom.
F	.128 (3.25) Min.

*With spring bottomed.
Metric equivalents (to the nearest 0.01mm) are given for general information only.

The specifications given refer specifically to mated pair of Part Number 4704-7985-00 and 4703-7985-00 (RG-405). Specifications on other connectors are available from the company on request.

The general electrical, mechanical and environmental specifications in the following table are recommended for procurement documents or drawings.

Engineering Data

Impedance:	50 ohms
Frequency:	dc to 28.0 GHz
Temperature Rating:	-65° to +125° C

Electrical

VSWR:	1.05 + .01f(GHz)
RF Transmission Loss:	.040 x $\sqrt{f}$ (GHz)
Insulation Resistance:	5,000 megohms min.
Contact Resistance:	
Center Contact:	6 milliohms max.
Outer Contact:	3 milliohms max.
Outer Contact to Cable:	0.5 milliohms max.
Dielectric Withstanding Voltage:	675 volts RMS
Corona Extinction Voltage 70,000 Ft.:	250 volts RMS
RF High Potential 5 MHz:	675 volts RMS
RF Leakage	-(90-fGHz) dB min.
Interface Only:	(fully mated)
Power Handling:	300W at 3 GHz (sea level) and room temperature

RG-405 (.085) Semi-Rigid

Environmental

Corrosion:	Method 101, Condition B, MIL-STD-202
Vibration:	Method 204, Condition D, 20G's, MIL-STD-202
Shock:	Method 213, Condition I, 100G's, MIL-STD-202
Temperature Cycling:	Method 107, Condition B, MIL-STD-202
Moisture Resistance:	Method 106, MIL-STD-202

Material

Housing:	Corrosion resistant steel Type 303 (stainless) per ASTM A484 and A582
Center Contact:	Beryllium copper per ASTM-B-196
Dielectric:	TFE fluorocarbon per ASTM-D-1457
Gasket (O'Ring):	MIL-P-25732

Mechanical

Force to Engage:	3 pounds max.								
Force to Disengage:	1.5 pounds max.								
Center Contact Retention:	4 pounds min.								
Durability:	1,000 cycles								
Radial Misalignment:									
Rigid Mount:	± .0025 inch								
Float Mount:	± .020 inch								
Mating Characteristics									
Jack Connector:									
Center Contact Socket:	<table> <tr> <td>Oversize test Pin:</td><td>.0210 +.0001 inch dia.</td></tr> <tr> <td>Test Pin Finish:</td><td>16 micro inch max.</td></tr> <tr> <td>Insertion Depth:</td><td>.030/.045</td></tr> <tr> <td>Number of Insertions:</td><td>3</td></tr> </table>	Oversize test Pin:	.0210 +.0001 inch dia.	Test Pin Finish:	16 micro inch max.	Insertion Depth:	.030/.045	Number of Insertions:	3
Oversize test Pin:	.0210 +.0001 inch dia.								
Test Pin Finish:	16 micro inch max.								
Insertion Depth:	.030/.045								
Number of Insertions:	3								
Insertion Force:	<table> <tr> <td>Test Pin:</td><td>.0208 +.0001 inch dia.</td></tr> <tr> <td>Test Pin Finish:</td><td>16 micro inch max.</td></tr> <tr> <td>Insertion Force:</td><td>3 pounds</td></tr> </table>	Test Pin:	.0208 +.0001 inch dia.	Test Pin Finish:	16 micro inch max.	Insertion Force:	3 pounds		
Test Pin:	.0208 +.0001 inch dia.								
Test Pin Finish:	16 micro inch max.								
Insertion Force:	3 pounds								
Withdrawal Force:	<table> <tr> <td>Test Pin:</td><td>.0195 -.0001 inch dia.</td></tr> <tr> <td>Test Pin Finish:</td><td>16 micro inch max.</td></tr> <tr> <td>Insertion Depth:</td><td>.050/.075</td></tr> <tr> <td>Withdrawal:</td><td>1/2 ounce min.</td></tr> </table>	Test Pin:	.0195 -.0001 inch dia.	Test Pin Finish:	16 micro inch max.	Insertion Depth:	.050/.075	Withdrawal:	1/2 ounce min.
Test Pin:	.0195 -.0001 inch dia.								
Test Pin Finish:	16 micro inch max.								
Insertion Depth:	.050/.075								
Withdrawal:	1/2 ounce min.								

Finish

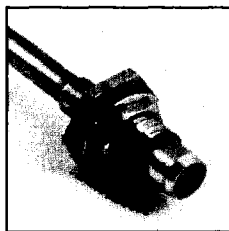
Center Contact:	Gold plate per MIL-G-45204, Typ II, Class 0 over nickel plate per QQ-N-290, Class 2 or passivate per ASTM-A380
Housing:	Gold plate per MIL-G-45204, Typ II, Class 0 over nickel plate per QQ-N-290, Class 2 or passivate per ASTM-A380

All dimensions shown are nominal.
Contact the factory for specific tolerances.

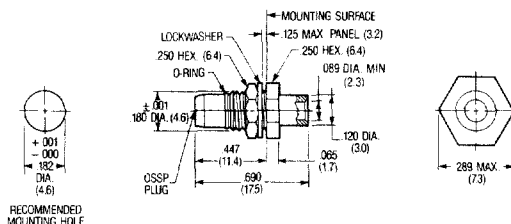
OSSP connectors are a subminiature version of the OSP blind mate series. Connectors in this series incorporate the design elements of the OSP interface including the float and mismatch features. OSSP blind mates are about 40% smaller than OSP's and are designed to be used in applications where space is at a premium.

A complete family of OSSP connectors and adapters is available including cable connectors, fixed and float mount panel connectors and hermetic connectors. Rigid mount units will function to specifications up to $\pm .0025$ inch (.06mm) radial misalignment with the mating plug connector. Applications requiring greater than $\pm .0025$ inch (.06mm) radial misalignment can use either the float design or floating connector plates with guide pins.

.085 Dia. • Direct Solder Attachment

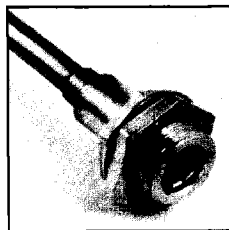


Bulkhead Feedthrough Cable Plug – Rear Mount

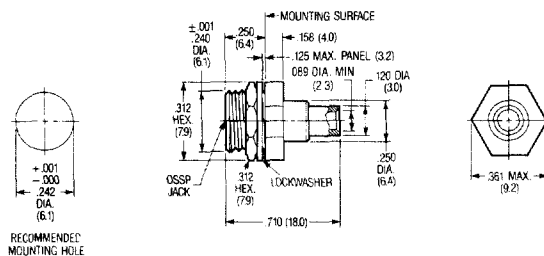


Cable	RG-405/U (.085)
Part Number	4703-7985-00

Finish: Housing that is soldered to cable outer conductor is gold plated. Refer to recommended assembly tools in Tool Section.

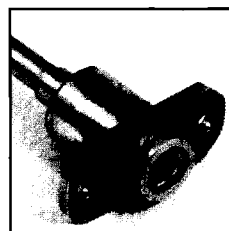


Bulkhead Feedthrough Cable Jack – Rigid Rear Mount

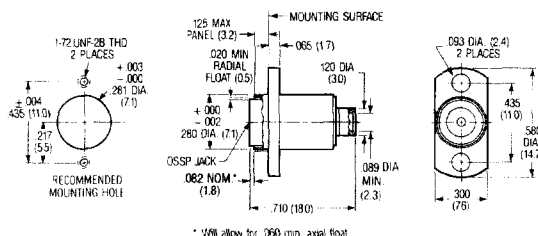


Cable	RG-405/U (.085)
Part Number	4704-7985-00

Finish: Housing that is soldered to cable outer conductor is gold plated. Refer to recommended assembly tools in Tool Section.



Flange Mount Cable Jack – Floating Rear Mount

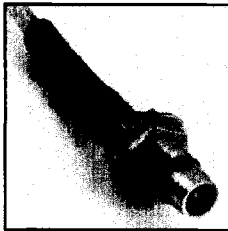


Cable	RG-405/U (.085)
Part Number	4706-7985-02

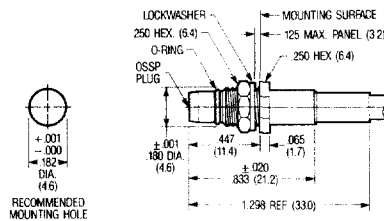
Finish: Inner housing that is soldered to cable is gold plated. Outer housing is passivated stainless steel. Refer to recommended assembly tools in Tool Section. When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

Subminiature • Modular Blind Mate Connectors For Flexible Cable

Flexible Cable • Crimp Attachment

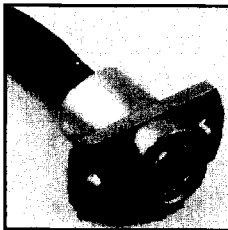


Bulkhead Feedthrough Cable Plug – Rear Mount

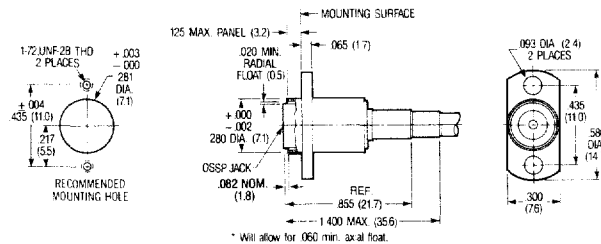


Cable	RG-188/U, 316 Double Braided Only
Part Number	4733-7316-02

Finish: Passivated stainless steel. For gold plate, change the part number suffix from -02 to -00.
Refer to recommended assembly tools in Tool Section.



Flange Mount Cable Jack – Floating Rear Mount



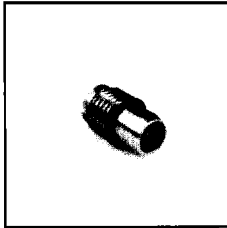
Cable	RG-188/U, 316 Double Braided Only
Part Number	4736-7316-02

Finish: Passivated stainless steel. For gold plate, change the part number suffix from -02 to -00.
Refer to recommended assembly tools in Tool Section.

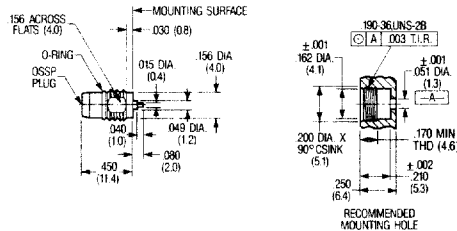
Subminiature • Modular Blind Mate Connectors

Panel Mount

Non-Hermetic • Straight Terminal

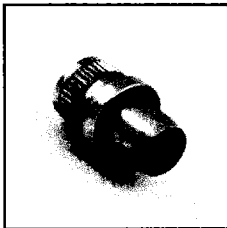


Threaded Installation – Panel Feedthrough Plug Receptacle

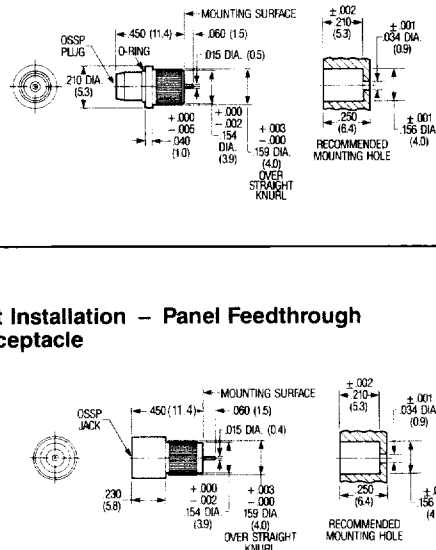


Part Number	4757-5006-02
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Finish: Passivated stainless steel. For gold plate, change the part number suffix from -02 to -00.

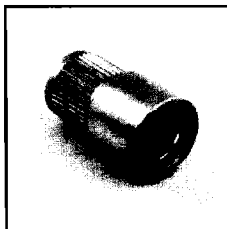


Press-Fit Installation – Panel Feedthrough Plug Receptacle

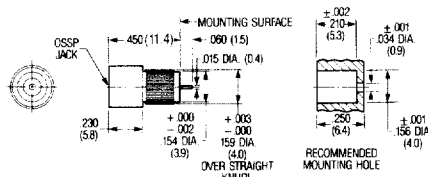


Part Number	4757-1154-02
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Finish: Passivated stainless steel. For gold plate, change the part number suffix from -02 to -00.



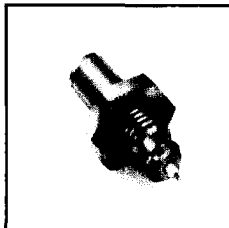
Press-Fit Installation – Panel Feedthrough Jack Receptacle



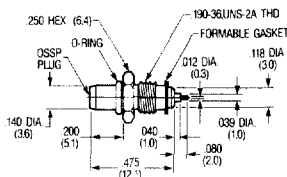
Part Number	4758-1154-02
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Finish: Passivated stainless steel. For gold plate, change the part number suffix from -02 to -00.

Metal-To-Metal Hermetic Seal



Formable Gasket – Panel Feedthrough Plug Receptacle

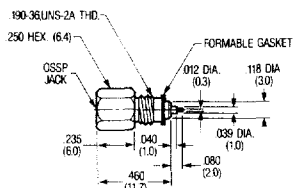


Part Number	4757-5014-00
VSWR (GHz)	1.06 + .01f
RF Leakage (dB)	-(85-fGHz)

Finish: Gold plate.
Recommended Mounting Hole Detail A follows at end of OSSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.



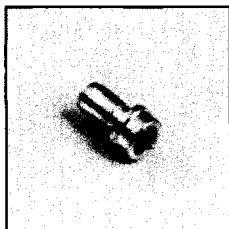
Formable Gasket – Panel Feedthrough Jack Receptacle



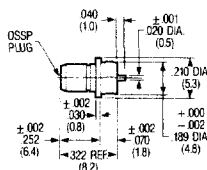
Part Number	4758-5014-00
VSWR (GHz)	1.06 + .01f
RF Leakage (dB)	-(85-fGHz)

Finish: Gold plate.
Recommended Mounting Hole Detail A follows at end of OSSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.

Solder and Braze-In Hermetic Seal



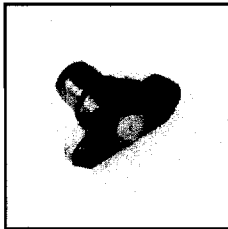
Panel Feedthrough Plug Receptacle



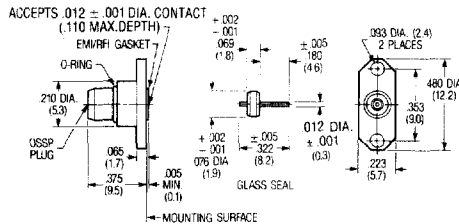
Part Number	4757-3204-00
VSWR (GHz)	1.06 + .01f
RF Leakage (dB)	-(85-fGHz)

Finish: Gold plate.

Field Replaceable • Solder and Braze-In Hermetic Seal

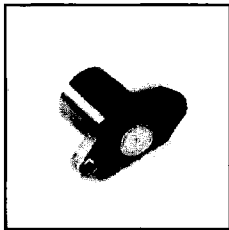


**2-Hole Flange Mount Plug Receptacle
With EMI/RFI Gasket**

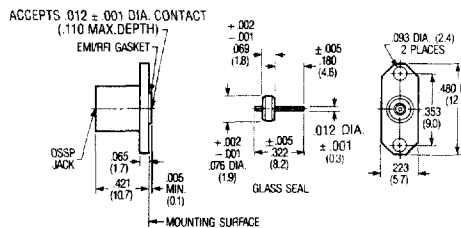


Part Number	4751-3355-02 Connector and Seal	2098-3364-94 Seal Only	4751-3354-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	-(85-fGHz)	-(85-fGHz)	-(85-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail B follows at end of OSSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.

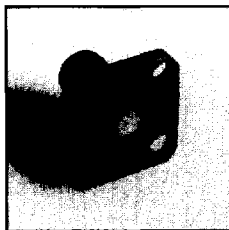


**2-Hole Flange Mount Jack Receptacle
With EMI/RFI Gasket**

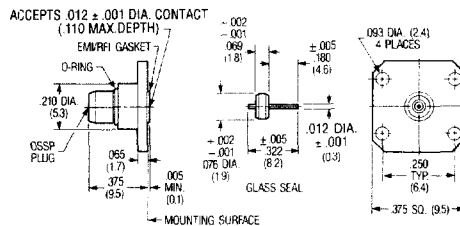


Part Number	4752-3355-02 Connector and Seal	2098-3364-94 Seal Only	4752-3354-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	-(85-fGHz)	-(85-fGHz)	-(85-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail B follows at end of OSSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.

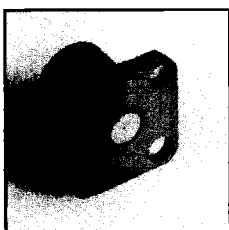


**4-Hole Flange Mount Plug Receptacle
With EMI/RFI Gasket**

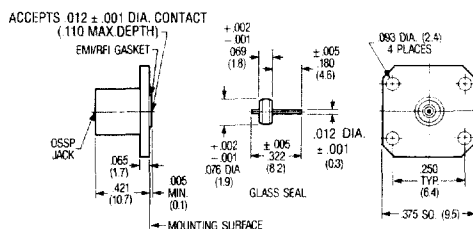


Part Number	4751-3351-02 Connector and Seal	2098-3364-94 Seal Only	4751-3350-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	-(85-fGHz)	-(85-fGHz)	-(85-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail C follows at end of OSSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.



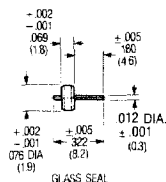
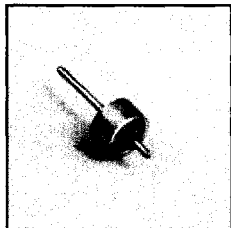
**4-Hole Flange Mount Jack Receptacle
With EMI/RFI Gasket**



Part Number	4752-3351-02 Connector and Seal	2098-3364-94 Seal Only	4752-3350-02 Connector Only
VSWR (GHz)	1.06 + .01f	1.02 + .003f	1.04 + .006f
RF Leakage (dB)	-(85-fGHz)	-(85-fGHz)	-(85-fGHz)

Finish: Passivated stainless steel. For gold plate, change the Part Number suffix from -02 to -00.
Recommended Mounting Detail C follows at end of OSSP Hermetic Section.
Refer to recommended assembly tools in Tool Section.

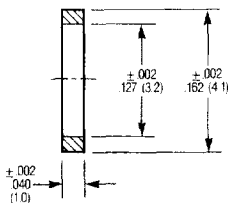
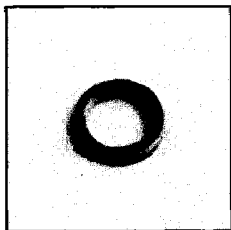
Solder-In Thermally Matched Hermetic Seal



Part Number	2098-3364-94
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Consult the factory for additional seals not listed.

EMI/RFI Gasket



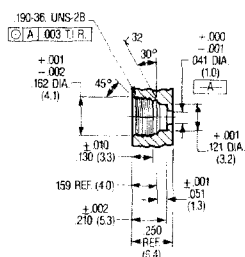
Part Number	1098-3230-54
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Subminiature • Modular Blind Mate Connectors

Hermetically Sealed

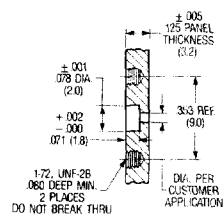
Recommended Mounting Hole Detail

Detail A*

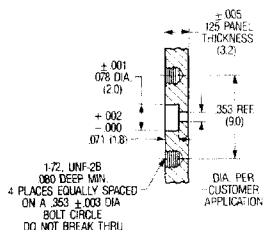


* Consult appropriate Assembly Procedure for complete mounting procedure.

Detail B'



Detail C:

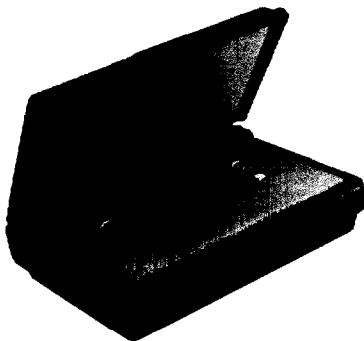


*Consult appropriate Assembly Procedure for complete mounting procedure.

OSSP Subminiature Calibration Kit

Part Number **4798-4009-54**

Calibration Kits are designed to be used with most Automatic Network Analyzer (ANA) Systems. It is intended to reduce measurement uncertainties for ANA Systems capable of performing an open/short average for reflection measurements, and test path normalization for transmission measurements. All kits include fixtures and calibration instructions usable with Scalar Network Analyzers.



Part Number **4701-5112-00**
OSSP Plug Termination
VSWR: dc-4 GHz, 1.05:1
4-12.4 GHz, 1.15:1
12.4-18 GHz, 1.20:1



Part Number **4702-5112-00**
OSSP Jack Termination
VSWR: dc-4 GHz, 1.05:1
4-12.4 GHz, 1.15:1
12.4-18 GHz, 1.20:1



Part Number **4721-1314-00**
OSSP Plug Short Circuit Termination



Part Number **4722-1314-00**
OSSP Jack Short Circuit Termination



Part Number **4721-1315-00**
OSSP Plug Open Circuit Termination



Part Number **4722-1315-00**
OSSP Jack Open Circuit Termination



Part Number **4781-2700-05**
OSSP Plug to 7mm Adapter



Part Number **4782-2700-05**
OSSP Jack to 7mm Adapter