

# SMP Connectors



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## Description

The new VidaRF SMP BLIND-MATE CONNECTORS offer customers a low cost alternative for those applications where the small size of an SMP is desired. They are compatible with all industry standard SMP and GPOoR connectors.

VidaRF SMP micro-miniature connectors have been optimized for VSWR performance in microstrip designs and feature excellent matching characteristics. Cable connectors will accept flexible cable, conformable and semi-rigid cables. Hermetically sealed male connectors are available for those applications where the ingress of liquid, air or gas needs to be eliminated. These hermetic versions of our popular SMP connectors are small, compact and light, owing to their single component hermetic design.



The Full Detent interface is generally used for cable connections, where a more secure mating is required. The Limited Detent is typically selected as the snap-on interface for PCB mount and blind-mate applications.

The Smooth compensate for axial and radial misalignment, and have the same engage / disengage force. However the Smooth compensate interface design makes it easier to connect more accurately, and is generally used for blind-mate applications.

## Characteristics

### Electrical:

- Impedance: 50  $\Omega$
- Frequency Range: DC to 40 GHz
- VSWR: 1.20 Max thru 26.5 GHz;  
1.50 Max thru 40.0 GHz
- RF Leakage: -80dB to 3 GHz, -65dB from 3 to 26.5 GHz

### Mechanical:

- Interface Design: MIL-STD-348A, Series SMP
- Engagement Force:
  - Full Detent (FD) ..... 15 lbs (66.7 N) max.
  - Limited Detent (LD) ..... 10 lbs (44.5 N) max.
  - Smooth Bore (SB) ..... 2 lbs (8.9 N) max.
- Disengagement Force:
  - Full Detent (FD) ..... 5 lbs (22.25 N) min.
  - Limited Detent (LD) ..... 2 lbs (8.9 N) min.
  - Smooth Bore (SB) ..... 0.5 lbs (2.2 N) min.
- Contact Retention: 1.5 pounds min. axial force
- Axial Misalignment: .000/.010"
- Radial Misalignment: .010" centerline to centerline(.020" with special shrouds)
- Durability:
  - Full Detent (FD) ..... 100 mating cycles min.
  - Limited Detent (LD) ..... 500 mating cycles min.
  - Smooth Bore (SB) ..... 1000 mating cycles min.

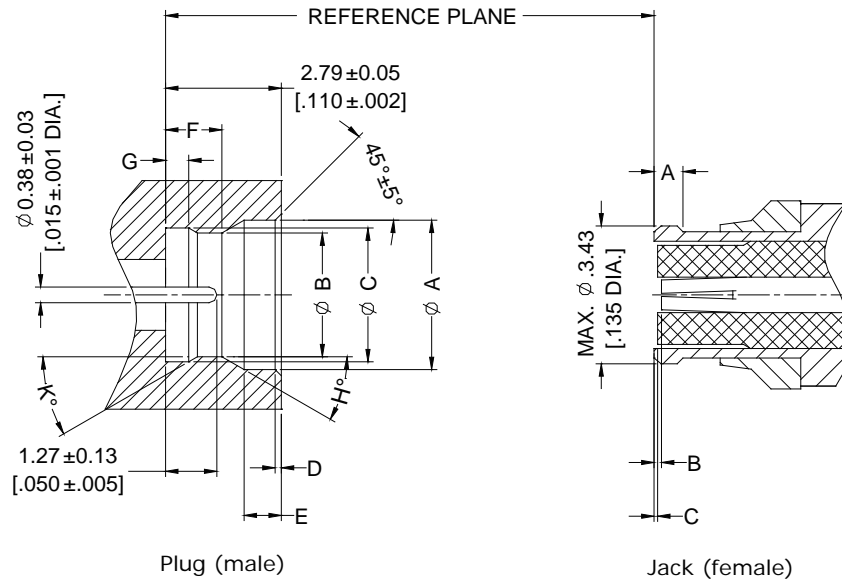
### Environmental:

- Temperature: -55°C to +155°C
- Thermal Shock: MIL-STD-202, Method 107, Condition B (except high temp +155°C or max high temp of cable)
- Corrosion: MIL-STD-202, Method 101, Condition B
- Shock (specified pulse): MIL-STD-202, Method 213, Condition I
- Vibration: MIL-STD-202, Method 204, Condition D
- Moisture Resistance: MIL-STD-202, Method 106 (except step 7b omitted)

### Material:

- Body: Stainless Steel, Type 303, per ASTM A582, Passivated per MIL-DTL-14072 (EL 300); Beryllium Copper Alloy per ASTM B196, Gold Plated per MIL-DTL-45204 (.00005" min.)
- Contact: Beryllium Copper per ASTM B196, Gold Plated per MIL-DTL-45204 (.00005" min.)
- Dielectric: PTFE Fluorocarbon per ASTM D1710
- Hermetic Seal: Glass bead

## Interface Dimensions

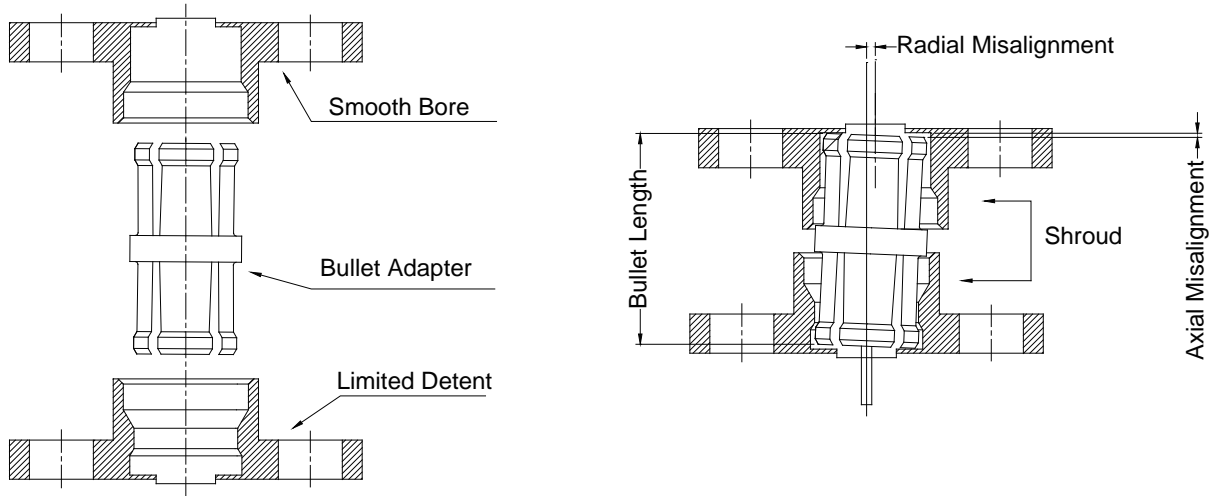


SMP Jack (female)				
	Cabled		Uncabled	
	min.	max.	min.	max.
<b>A</b>	0.64/.025	0.89/.035	0.46/.018	0.64/.025
<b>B</b>	0.00/.000	0.20/.008	0.00/.000	0.20/.008
<b>C</b>	0.00/.000	-	0.00/.000	-

SMP Plug (male)						
	Full Detent		Limited Detent		Smooth Bore	
	min.	max.	min.	max.	min.	max.
<b>A</b>	3.53/.139	3.68/.145	3.53/.139	3.68/.145	3.53/.139	3.68/.145
<b>B</b>	2.92/.114	3.00/.118	3.00/.118	3.10/.122	3.12/.123	3.23/.127
<b>C</b>	3.15/.124	3.20/.126	3.15/.124	3.20/.126	-	-
<b>D</b>	0.08/.003	0.20/.008	0.08/.003	0.20/.008	0.08/.003	0.20/.008
<b>E</b>	0.84/.033	0.94/.037	0.84/.033	0.94/.037	0.84/.033	0.94/.037
<b>F</b>	1.30/.051	1.45/.057	1.37/.054	1.52/.060	1.50/.059	1.65/.065
<b>G</b>	0.52/.0205	0.60/.0235	0.52/.0205	0.60/.0235	-	-
<b>H</b>	35° REF	35° REF	35° REF	35° REF	35° REF	35° REF
<b>k</b>	30° REF	30° REF	30° REF	30° REF	-	-

## Applications

### Male shrouds with bullet adapters



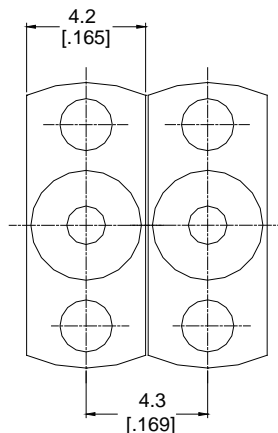
In blind-mate applications, panel mount shrouds are used with “bullet” adapters to provide axial and radial “float” for proper mating.

The bullet adapter mates with the pins of hermetic seals soldered into the panels.

In these applications, one shrouds connectors will be typically specified as a “limited detent” type, and the other as a “smooth bore” type. This pairing keeps mating and unmating forces to a minimum, and retains the bullet adapter in the “limited detent” shroud when the panels are separated.

The space between panels when mated can be changed by the use of different-length bullet adapters.

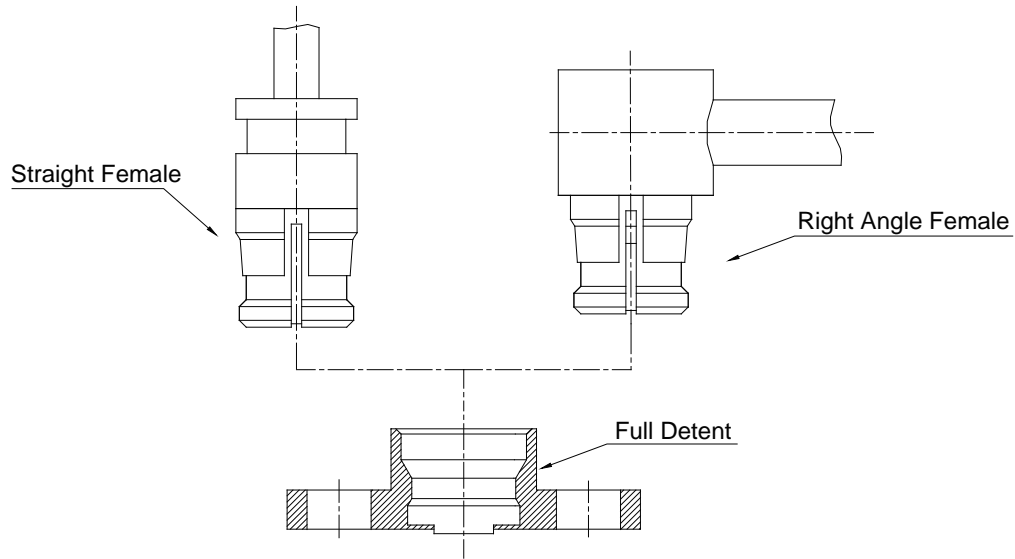
### Spacing for Mounted Shrouds



Shrouds may be mounted with centerline spacing as little as 4.3 [.169] for units with 4.2 [.165] wide flanges.

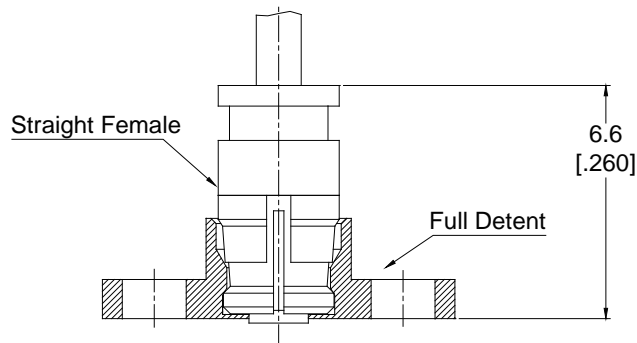
**Applications**

**Male shrouds with cable connectors**

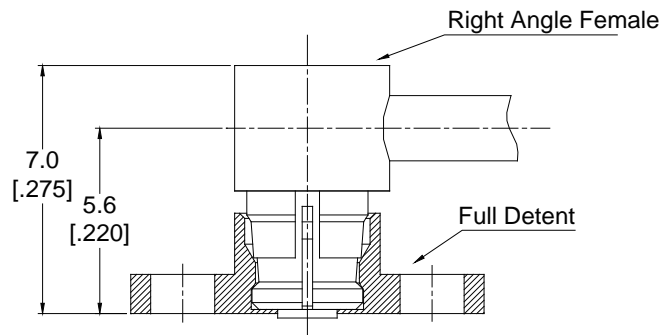


The Full Detent interface is used in application with cable connectors to provide secure mating.

**Height above panel for typical straight cable connector**



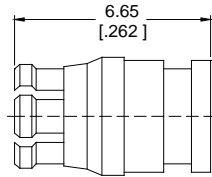
**Height above panel for typical right angle cable connector**



## Products

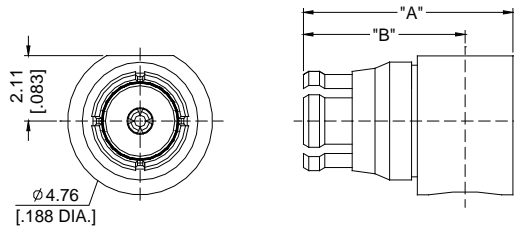
### Cable Connectors

#### Straight solder type cabled jacks (female)



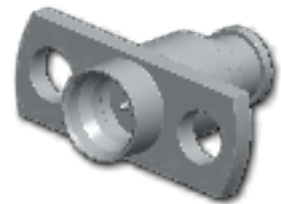
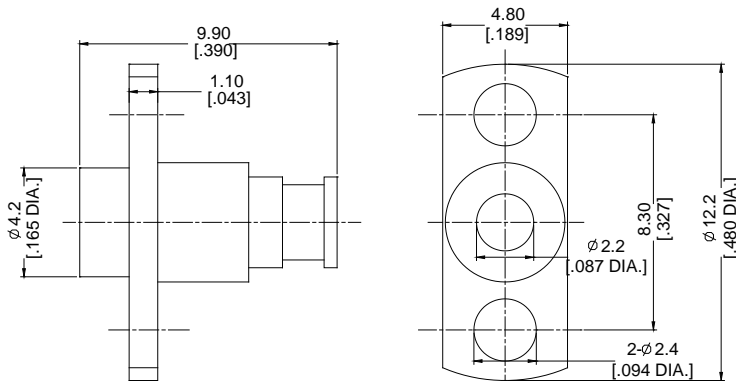
Part No.	Cable Group (Example)	Plating Body	Assembly Instruction
SMP-9312-2011	2/50/S (RG178)	Gold	AI 01
SMP-9312-2002	.047/50 (.047 semi-rigid)	Gold	AI 01
SMP-9312-2001	.083/.085/50 (.086 semi-rigid/RG405)	Gold	AI 03

#### Right angle solder type cabled jacks (female)



Part No.	Cable Group (Example)	Plating Body	Assembly Instruction	Dimension "A"	Dimension "B"
SMP-9322-2012	2/50/S (RG178)	Gold	AI 02	7.10/.279	5.28/.208
SMP-9322-2004	.047/50 (.047 semi-rigid)	Gold	AI 02	7.10/.279	5.28/.208
SMP-9322-2003	.083/.085/50 (.086 semi-rigid/RG405)	Gold	AI 04	7.55/.297	5.73/.226

#### Right angle solder type cabled plug (male) — flange mount



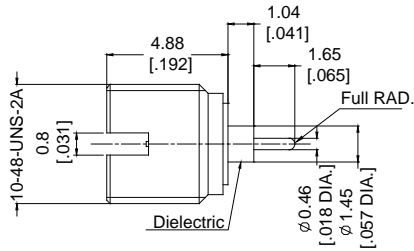
Part No.	Cable Group (Example)	Plating Body	Interface	Mounting Hole	Assembly Instruction
SMP-9311-2013	.083/.085/50 (.086 semi-rigid/RG405)	Gold / Passivation	Full detent	MH 10	AI 03



## Products

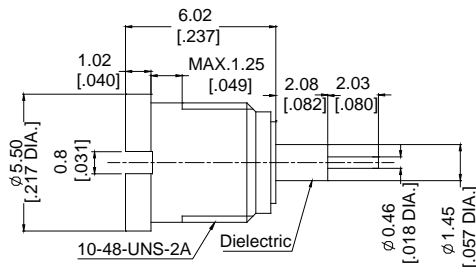
### Thread-in Shrouds

#### Straight thread-in terminal, .018" contact plugs (male)



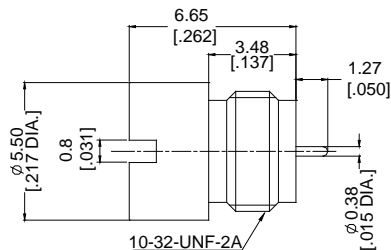
Part No.	Plating Body	Interface
SMP-9311-5014-1	Gold	Full detent
SMP-9311-5014-2	Gold	Limited detent
SMP-9311-5014-3	Gold	Smooth bore

#### Straight thread-in terminal, .018" contact plugs (male)



Part No.	Plating Body	Interface
SMP-9311-5015-1	Gold	Full detent
SMP-9311-5015-2	Gold	Limited detent
SMP-9311-5015-3	Gold	Smooth bore

#### Straight thread-in hermetic, .015" contact plugs (male)

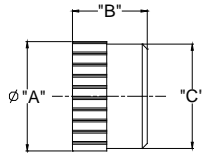


Part No.	Plating Body	Interface
SMP-9311-5016-1	Gold	Full detent
SMP-9311-5016-2	Gold	Limited detent
SMP-9311-5016-3	Gold	Smooth bore

## Products

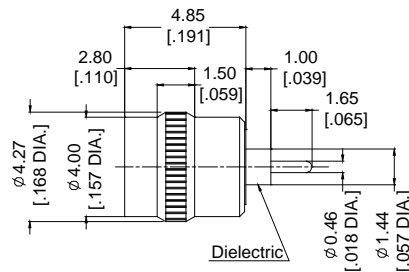
### Press-in Shrouds

#### Straight press-in shroud plugs (male), no center conductor



Part No.	Plating Body	Interface	"A"	"B"	"C"	Mounting Hole
SMP-9311-5017	Gold	Limited detent	4.42/.174	3.10/.120	4.32/.170	MH 36
SMP-9311-5019	Gold	Limited detent	3.90/.154	2.00/.080	3.60/.143	MH 35

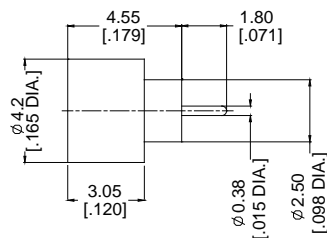
#### Straight press-in terminal plugs (male)



Part No.	Plating Body	Interface
SMP-9311-5018-1	Gold	Limited detent
SMP-9311-5018-2	Gold	Smooth bore

### Hermetic Shrouds

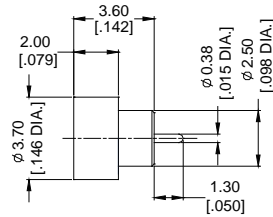
#### Hermetic Shroud plugs (male), full shroud full body



Part No.	Plating Body	Interface	Mounting Hole
SMP-9311-6010-1	Gold	Full detent	MH 32 / MH 33
SMP-9311-6010-2	Gold	Limited detent	MH 32 / MH 33
SMP-9311-6010-3	Gold	Smooth bore	MH 32 / MH 33

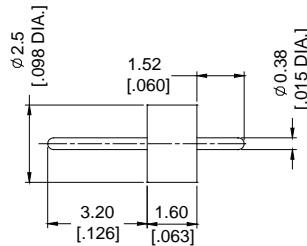
## Products

### Hermetic Shroud plugs (male), half shroud full body



Part No.	Plating Body	Interface	Mounting Hole
SMP-9311-6009-1	Gold	Full detent	MH 32 / MH 33
SMP-9311-6009-2	Gold	Limited detent	MH 32 / MH 33
SMP-9311-6009-3	Gold	Smooth bore	MH 32 / MH 33

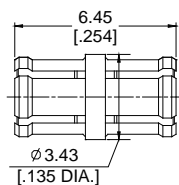
### Hermetic Seal



Part No.	Plating Body	Mounting Hole
HS-04	Gold	MH 34

### Bullet Adapter

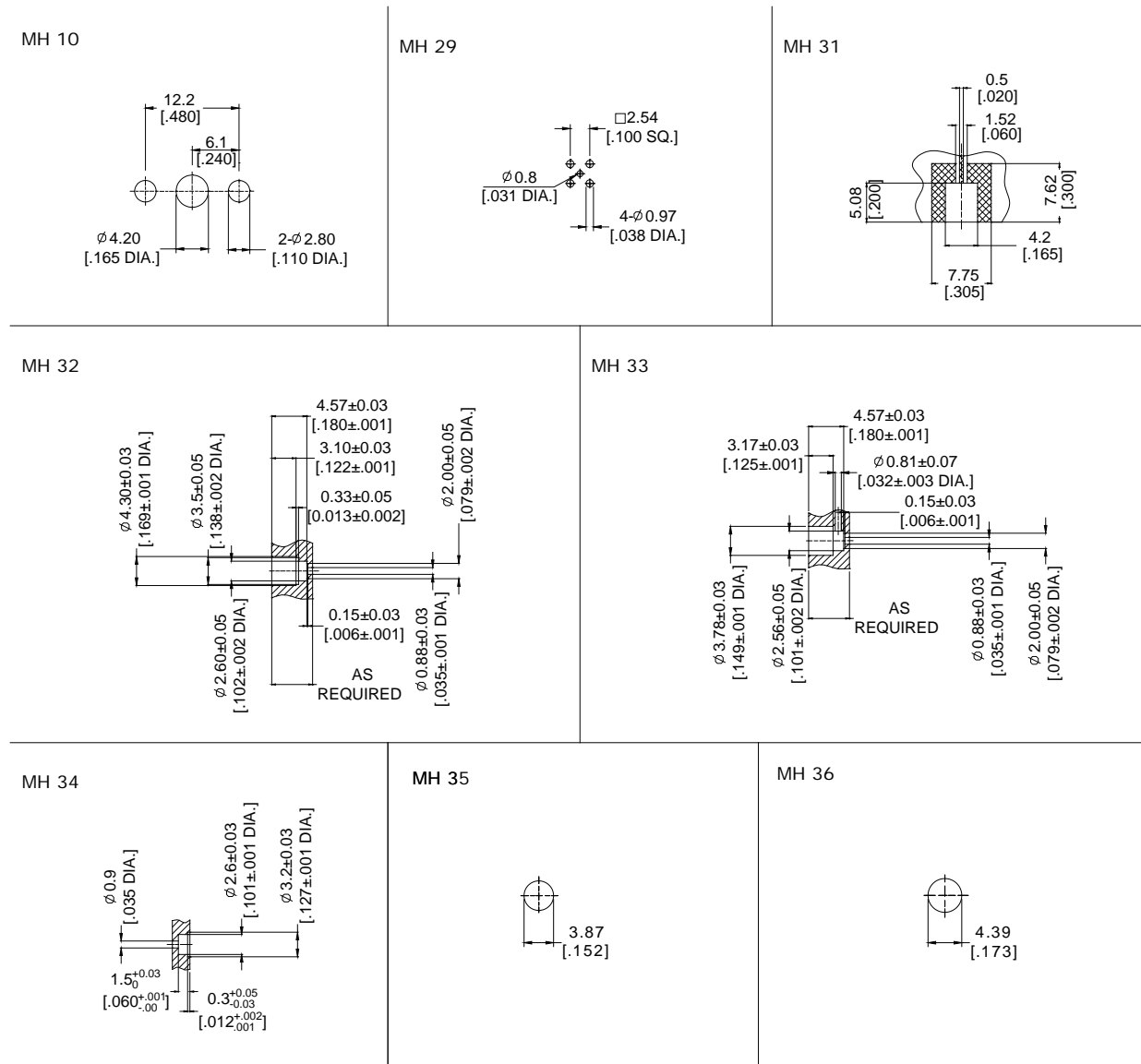
### Female to female



Part No.	Plating Body
SMP-803-001	Gold

## Mounting Holes

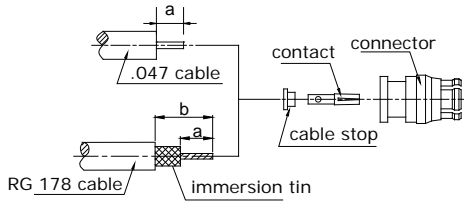
### Recommended Mounting Hole Dimensions



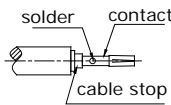
## Assembly Instructions

### AI 01

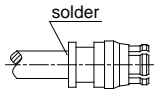
Part No.	Cable Group (Example)	Stripping Length	
		a (mm/inch)	b (mm/inch)
SMP-9312-2002	.047/50 (SR047)	2.2/.087	-
SMP-9312-2011	2/50/S (RG178)	2.2/.087	5.5/.216



- 1.1 Strip the cable. RG 178 cable need to immersion tin.
- 1.2 Insert center conductor into the cable stop as show and place contact onto center conductor.



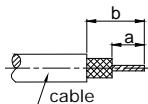
- 2.1 Solder the center conductor onto the cable.
- 2.2 Clean soldering area



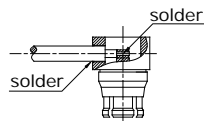
- 3.1 Solder the body onto the cable.
- 3.2 Clean soldering area.

### AI 02

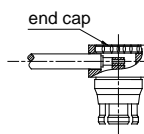
Part No.	Cable Group (Example)	Stripping Length	
		a (mm/inch)	b (mm/inch)
SMP-9322-2004	.047/50 (SR047)	0.9/.035	1.6/.063
SMP-9322-2012	2/50/S (RG178)	0.9/.035	1.6/.063



- 1.1 Strip the cable. RG 178 cable need to immersion tin.



- 2.1 Solder contact to center conductor through rear access port in connector body using a minimum amount of solder and heat for a good joint.
- 2.2 After center conductor solder joint has cooled, solder connector body to cable jacket.
- 2.3 Clean soldering area.

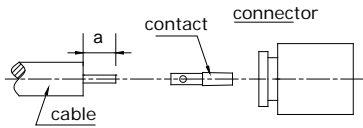


- 3.1 Press end cap into rear access.

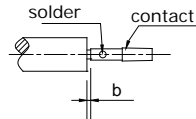
## Assembly Instructions

### AI 03

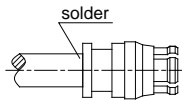
Part No.	Cable Group (Example)	Stripping Length	
		a (mm/inch)	b (mm/inch)
SMP-9312-2001	.083/.085/50 (SR086 / RG405)	1.78/.070	0.25/.070
SMP-9311-2013	.083/.085/50 (SR086 / RG405)	2.20/.087	-



- 1.1 Strip the cable. Clean all debris from prepared cable.
- 1.2 place contact onto center conductor, insert solder shim between cable jacket and contact.



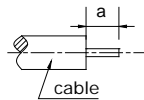
- 2.1 Solder the center conductor onto the cable.
- 2.2 Clean soldering area



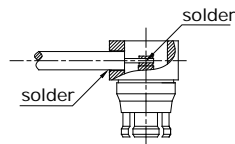
- 3.1 Solder the body onto the cable.
- 3.2 Clean soldering area.

### AI 04

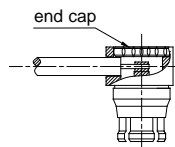
Part No.	Cable Group (Example)	Stripping Length
		a (mm/inch)
SMP-9322-2003	.083/.085/50 (SR086 / RG405)	1.89/.075



- 1.1 Strip the cable. Clean all debris from prepared cable.



- 2.1 Solder contact to center conductor through rear access port in connector body using a minimum amount of solder and heat for a good joint.
- 2.2 After center conductor solder joint has cooled, solder connector body to cable jacket.
- 2.3 Clean soldering area.



- 3.1 Press end cap into rear access.

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SMP-9311-4006-2	SMP straight plug (male), limited detent, surface mount receptacle	7
SMP-9311-4006-3	SMP straight plug (male), smooth bore, surface mount receptacle	7
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