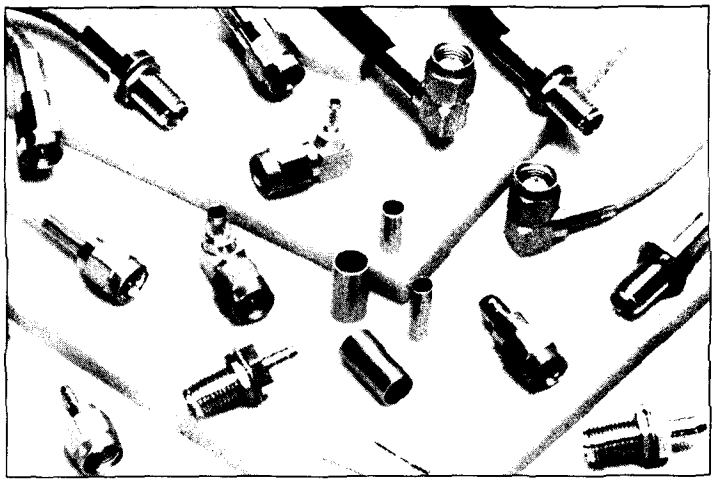
3-Piece SMA (OSM®) Connectors Reduce Installation Time

- **Reliable stainless steel construction**
- **Fewer parts facilitate assembly**
- **Fully crimpable**
- **Axially captured**

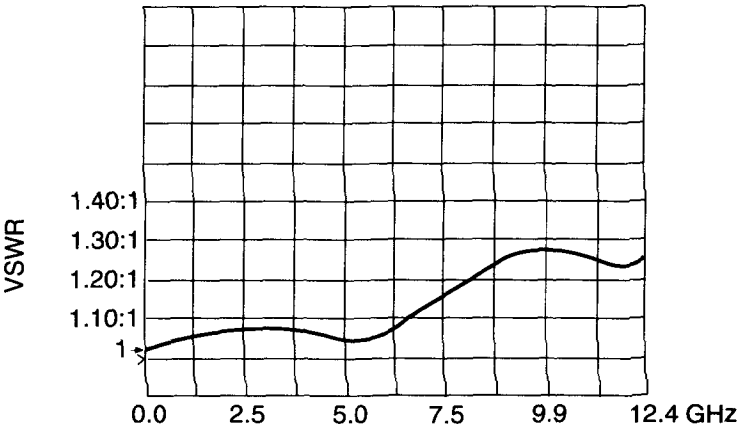
The M/A-COM 3-Piece SMA cable connector series has been designed to facilitate high volume cable assembly manufacturing. Standard configurations include straight cable plug, right angle cable plug and bulkhead cable jack. Fewer piece parts and a fully crimpable design translate into lower total installed costs for users. The crimped outer ferrule features fast, consistent and reliable cable attachment with excellent cable retention. Industry standard pneumatic crimp tooling can be utilized for high volume terminations. Extended length ferrules provide added strain relief characteristics and eliminate the need for a supplementary shrink boot. Center contacts can be either crimped or soldered, offering enhanced flexibility for both manufacturing and application needs. These SMA connectors are available for all popular RG/U cables including 55, 58, 141, 142, 174, 179, 187, 188, 223, 303, 316, 400 and double braided RD-316. Bulk packaging is available.

Passivated stainless steel construction and SPC controlled manufacturing provide excellent repeatable performance. Axially captured center contacts enhance mechanical reliability and ensure uncompromised electrical performance. Right angle plugs utilize a unique one piece housing construction for mechanical integrity.

For SMA cable assembly requirements, M/A-COM's 3-Piece SMA connectors feature excellent performance and value at a lower installed cost. Ease of assembly, high quality design and competitive prices make M/A-COM's 3-Piece SMA connectors an ideal solution for applications in telecom, datacom or test & measurement. Contact a local M/A-COM sales office or authorized distributor for qualification samples.



Typical 3-Piece SMA Design



Typical VSWR for 3-Piece SMA Straight Cable Plug Part Number 2831-7316-02

OSM is a registered trademark of M/A-COM, Inc.

North America: Tel. (800) 366-2266 Fax (800) 618-8883 ■ Asia/Pacific: Tel. +81 (03) 3226-1671 Fax +81 (03) 3226-1451 ■ Europe: Tel. +44 (1344) 869 595 Fax +44 (1344) 300 020

SMA (OSM®) Specifications - 3-Piece SMA

Requirement	Detail
General	
Material	Steel, corrosion resistant per ASTM-A-582 and ASTM-A-484, Type 303. Beryllium copper per ASTM-B-196. PTFE Fluorocarbon per MIL-P-19468 and ASTM-D-1457.
Finish	Center Contacts shall be gold plated (MIL-G-45204) over nickel plate (QQ-N-290). Housing and mounting hardware are passivated per ASTM-A-380. Crimp ferrules are nickel plated per QQ-N-290.
Design	The design shall be such that the outline shown in this catalog and the interface dimensions of MIL-STD-348 are met.
Electrical	
Frequency	dc-12.4 GHz or maximum operating frequency of cable per MIL-C-17
Nominal Impedance	50 ohms

Connector Type	Cable	VSWR (Max.)	Contact Resistance (milliohms max.)		Insulation Resistance (megohms min.)	Dielectric Withstanding Voltage (VRMS)	Corona Extinction Voltage at 70,000 Ft. (VRMS min.)	RF Transmission Loss	RF High Potential at 5 MHz (VRMS)	RF Leakage (dB min.)
			Center Contact	Outer Contact						
Straight Cable Plugs & Jacks	RG-55, 142, 223, 400	1.30	2.0	2.0	10,000	1000	250	$.06\sqrt{f}$(GHz)	670	-(60-fGHz)
Crimp Attachment	RG-58, 141, 303	1.30	2.0	2.0	10,000	1000	250	$.06\sqrt{f}$(GHz)	670	-(60-fGHz)
2831, 2834 Series	RG-174,179,187, 188,316, RD-316	1.30	2.0	2.0	10,000	750	190	$.06\sqrt{f}$(GHz)	500	-(60-fGHz)
Right Angle Cable Plugs	RG-55, 142, 223, 400	1.40	2.0	2.0	10,000	1000	250	$.07\sqrt{f}$(GHz)	670	-(60-fGHz)
Crimp Attachment	RG-58, 141, 303	1.40	2.0	2.0	10,000	1000	250	$.07\sqrt{f}$(GHz)	670	-(60-fGHz)
2837 Series	RG-174, 179, 187, 188, 316, RD-316	1.40	2.0	2.0	10,000	750	190	$.07\sqrt{f}$(GHz)	500	-(60-fGHz)

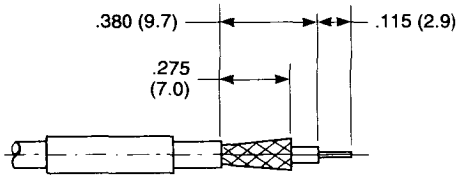
Mechanical	
Force to Engage	The torque required to engage and disengage shall not exceed 2 in.-lbs. The longitudinal force is not applicable.
Coupling Nut Retention	60 lbs. min. Applicable for plug connectors only.
Coupling Proof Torque	15 in.-lbs. min. Applicable for plug connectors only.
Mating Characteristics	Applicable to jack connectors only. Reference MIL-STD-348 for dimensions: oversize test pin .0375 min. dia., .030 to .045 deep, insertion force 3 lbs. max. with .0370 min. dia. pin, withdrawal force 1 oz. min. with .0355 max. dia. pin.
Connector Durability	The connector to be tested and its mating connector shall be subjected to 500 insertion and withdrawal cycles at 12 cycles per minute max. The connector shall show no evidence of mechanical failure and shall meet the mating characteristic requirements.
Recommended Mating Torque	7 to 10 in.-lbs.
Environmental	
Vibration	Specification MIL-STD-202, method 204, test condition D.
Shock	Specification MIL-STD-202, method 213, test condition I.
Thermal Shock	Specification MIL-STD-202, method 107, test condition B.
Corrosion (Salt Spray)	Specification MIL-STD-202, method 101, test condition B.
Moisture Resistance	Specification MIL-STD-202, method 106.
Temperature Rating	-65°C to +165°C

Cable Retention

Cable Type	(lbs. min.)	
	Single Braid	Double Braid
RG-174, 179, 187, 188, 316, RD-316	20	25
RG-55, 58, 141, 142, 303, 223, 400	40	45

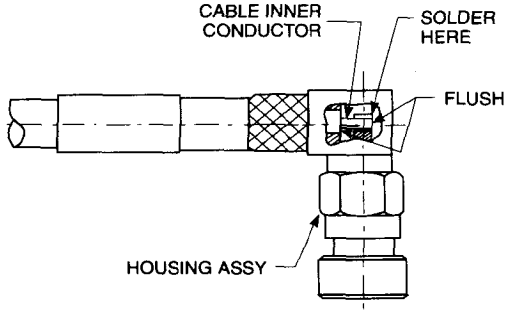
North America: Tel. (800) 366-2266 Fax (800) 618-8883 ■ Asia/Pacific: Tel. +81 (03) 3226-1671 Fax +81 (03) 3226-1451 ■ Europe: Tel. +44 (1344) 869 595 Fax +44 (1344) 300 020

SMA (OSM®) 3-Piece SMA Typical Assembly Procedure for Right Angle Plug Connectors



1. Slide crimp sleeve over cable, trim cable to dimensions shown and tin the inner conductor.

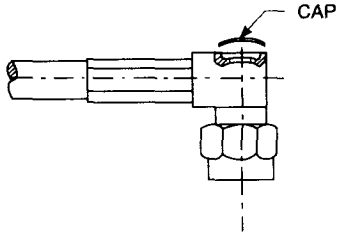
   NOTE: Be careful not to nick the braid or center conductor.



2. Place locator tool onto the housing assembly. (Recommended for maintaining correct interface dimensions).

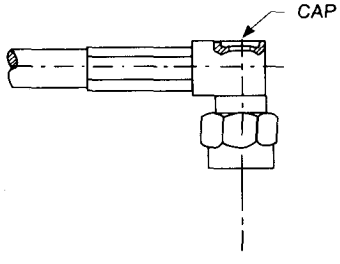
   Insert the cable into back end of the housing assembly as shown, nesting the cable center conductor into the connector center conductor slot as shown.

   Solder cable center conductor to center contact as shown.



3. Slide crimp sleeve over the braid and crimp using the proper die cavity for the cable being used. (See table below for proper die cavity.)

   Remove locator tool from housing assembly if being used.



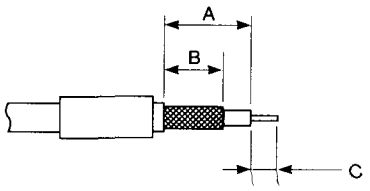
4. Insert cap into housing opening as shown and press flat using a .181 (4.5 mm) dia. punch.

   Option: Solder or epoxy cap into place being careful to avoid leakage into the housing assembly.

Hex Size	Cable Type
.128	RG-174, 179, 187, 188, 316
.213	RG-55, 58, 141, 142, 223, 303, 400
.151	RD-316

North America: Tel. (800) 366-2266 Fax (800) 618-8883 ■ Asia/Pacific: Tel. +81 (03) 3226-1671 Fax +81 (03) 3226-1451 ■ Europe: Tel. +44 (1344) 869 595 Fax +44 (1344) 300 020

SMA (OSM®) 3-Piece SMA Typical Assembly Procedure for Straight Plug & Bulkhead Jack Connectors

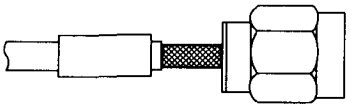


1. Slide crimp sleeve over cable, and trim cable to proper dimensions as shown in chart.

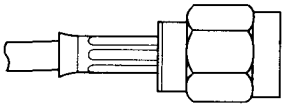
   NOTE: Be careful not to nick the braid or center conductor.

2. Solder center contact onto center conductor of the cable as shown.

   Option: Crimp center contact. See Notes 1 and 2 below.



3. Insert prepared cable into the housing until center contact snaps into place. Place cable braid over back end of the housing.



4. Slide crimp sleeve over cable braid and crimp using the proper die cavity for the cable being used. (See table below for proper die cavity.)

A plug body is shown, but these instructions are relevant to both plugs and jacks.

3-Piece SMA Connector Type	Cable Strip Dimensions (±.005)		
	A	B	C
Plug	.315	.275	.085
Jack	.325	.275	.085

Hex Size	Cable Type
.128	RG-174, 179, 187, 188, 316
.213	RG-55/U, 58, 141,142, 223, 303, 400
.151	RD-316
For Center Contact Crimping	
.042	All Cable Types

NOTES:

1. For center contact crimping, use Hex Die 2598-5380-54 in the Econo-Crimp tool or use Hex Die 2598-5379-54 in the Hex Crimp Tool.
2. Crimping of solid center conductor cable is not recommended.

North America: Tel. (800) 366-2266 Fax (800) 618-8883 ■ Asia/Pacific: Tel. +81 (03) 3226-1671 Fax +81 (03) 3226-1451 ■ Europe: Tel. +44 (1344) 869 595 Fax +44 (1344) 300 020