JOHNSON®

SMA One Piece Semi-Rigid Connectors

Emerson Network Power Connectivity Solutions

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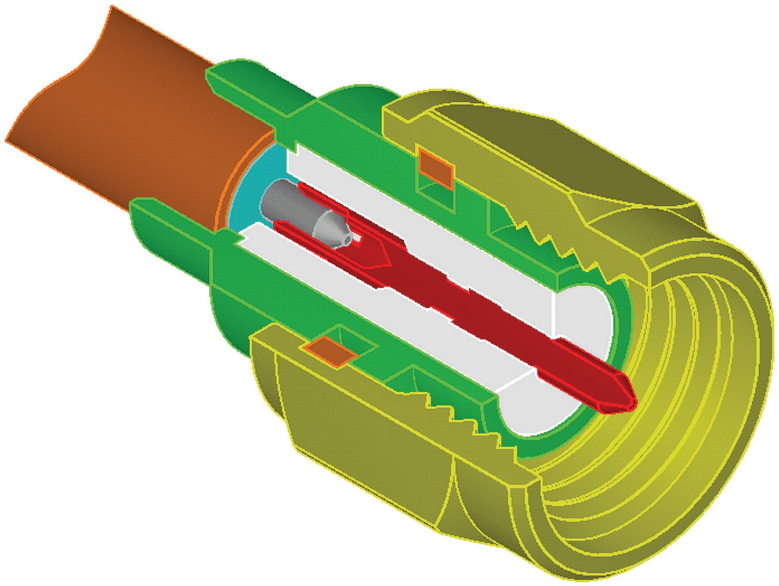
SMA Captivated Solderless Contact Connectors for Semi-Rigid Cable



The Johnson® captivated solderless contact connectors for semi-rigid cable provide unique solution for high frequency cable assemblers. As compared to standard solde on connectors with separate center contacts, these SMA connectors offer several ke advantages:

- Assembly is easier and faster than non-captive contact connectors.
- Captivated center contacts allow the complete connector assembly to simply plug onto the prepared cable. The only soldering required is between the connector body and cable jacket.
- Rugged center contact socket design reduces potential intermittent signals, which can be caused by the use of high temperature lead free solder alloys.
- Precision center contacts provide predictable mechanical and electrical performance. Factory controlled contact location reduces variations in high frequency electrical performance.
- Electrical performance is similar to non-captive contact connectors.
- Low VSWR is specified to 18 GHz. The connectors can be used at higher frequencies with very good Return Loss.
- Plug connectors feature durable thickwall style mating interfaces with extende cutoff frequency to 28 GHz.
- Bulkhead jack connectors are provided with silicone rubber o-rings for environmental sealing of the flange mounting surface.
- Precision hand assembly tooling assures repeatable performance.
- All connectors meet or exceed the performance requirements of MIL-PRF-390 captive contact semi-rigid SMA connectors.

MATERIAL SPECIFICATIONS

Bodies: Brass per QQ-B-626, gold plated* per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290
Contacts: Beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00005" min.
Nut Retention Spring: Beryllium copper per QQ-C-533. Unplated
Insulators: PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457
Mounting Hardware: Brass per QQ-B-626 or QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290
Seal Rings: Silicone rubber per ZZ-R-765

* All gold plated parts include a .00005" min. nickel underplate barrier layer.

MECHANICAL SPECIFICATIONS

Engagement Design: MIL-STD-348, Series SMA
Durability: 500 Cycles minimum
Engagement/Disengagement Force: 2 inch-pounds maximum
Mating Torque: 7 to 10 inch-pounds
Bulkhead Mounting Nut Torque: 15 inch-pounds maximum
Coupling Proof Torque: 15 inch-pounds minimum
Coupling Nut Retention: 60 pounds minimum
Contact Retention: 6 pounds minimum axial force

Cable Retention:	Axial Force (lbs)	Torque (in-oz)
Connectors for .086 semi-rigid	30	16
Connectors for .141 semi-rigid	60	55

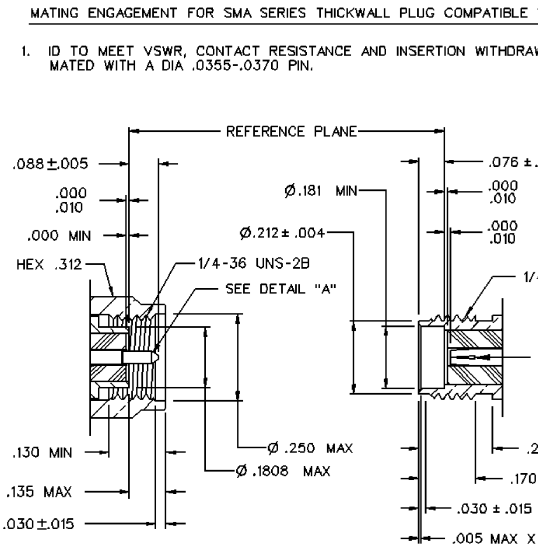
ENVIRONMENTAL SPECIFICATIONS

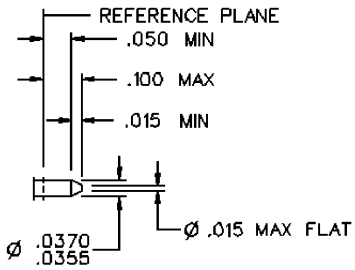
(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

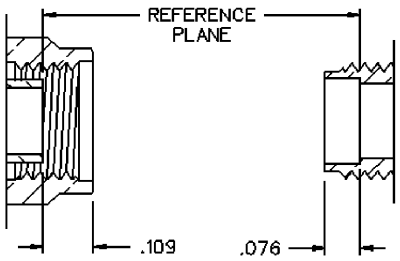
Temperature Range: -65°C to +165°C
Thermal Shock: MIL-STD-202, Method 107, Condition B - Except 115°C High Temp
Corrosion: MIL-STD-202, Method 101, Condition B
Shock: MIL-STD-202, Method 213, Condition I
Vibration: MIL-STD-202, Method 204, Condition D
Moisture Resistance: MIL-STD-202, Method 106

+ Avoid applications where hazardous voltages are applied to user contacted components.
Voltage ratings relate to reliable component operation, not safe application.

Mating Engagement for SMA Series per MIL-







ELECTRICAL SPECIFICATIONS

Impedance: 50 Ohms

Frequency Range:

Plugs . . . . . 0-28 GHz

Jacks . . . .0-25 GHz

VSWR: (f = GHz)

Plugs for Cable Type	0-18 GHz	18-28 GHz
.086 semi-rigid	1.07+.01f	<1.30 Typical
.141 semi-rigid	1.05+.01f	<1.25 Typical

Jacks for Cable Type	0-18 GHz	18-25 GHz
.086 semi-rigid	1.07+.01f	<1.30 Typical
.141 semi-rigid	1.05+.01f	<1.25 Typical

Working Voltage: (Vrms maximum)

Connectors for Cable Type	Sea Level	70K Feet
.086 semi-rigid	335	85
.141 semi-rigid	500	125

Dielectric Withstanding Voltage: (Vrms minimum at sea level)

Connectors for Cable Type

.086 semi-rigid 1000

.141 semi-rigid 1500

Corona Level: (Volts minimum at 70,000 feet)

Connectors for Cable Type

.086 semi-rigid 250

.141 semi-rigid 375

Insertion Loss: 0.03 $\sqrt{f(GHz)}$, dB maximum, tested at 10 GHz

Insulation Resistance: 5000 Megohms minimum

Contact Resistance: (milliohms maximum)	Initial	After Environmental
Center Contact	3.0	5.0
Outer Conductor	2.0	Not Applicable

RF Leakage: (dB minimum, tested at 2.5 GHz) . . . . . -90

RF High Potential Withstanding Voltage:
(Vrms minimum, tested at 4 and 7 MHz)

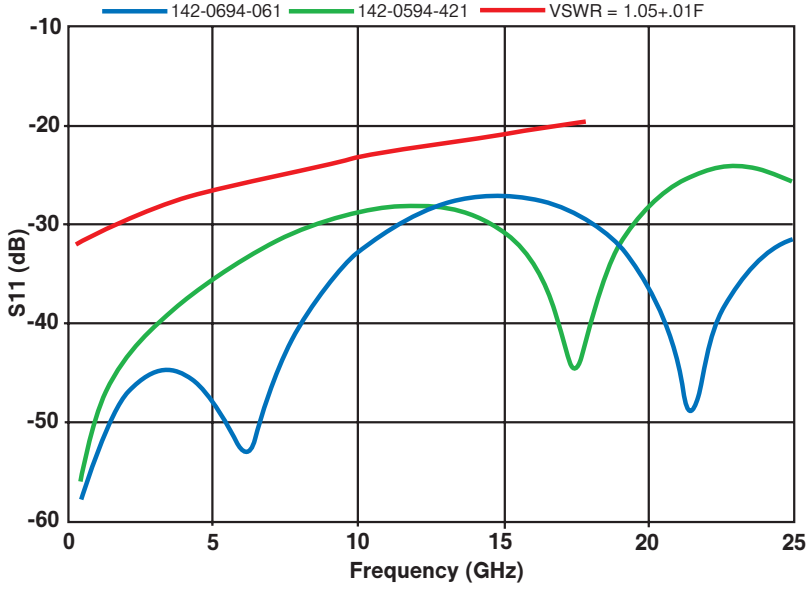
Connectors for Cable Type

.086 semi-rigid 670

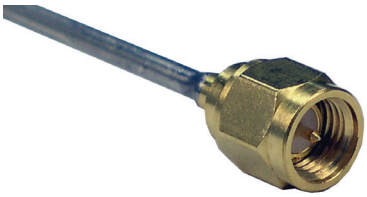
.141 semi-rigid 1000

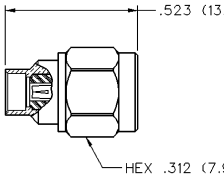
Typical Return Loss

SMA One Piece Captivated Contact Connectors
Assembled to RG-402 (.141 OD Semi-rigid Cable)



Straight Solder Type Plug With Captivated Solderless Contact, Captive Nut and Thick Wall Interface

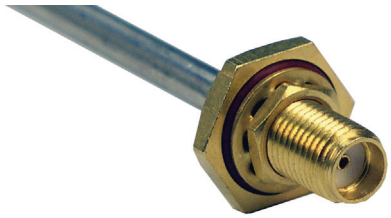


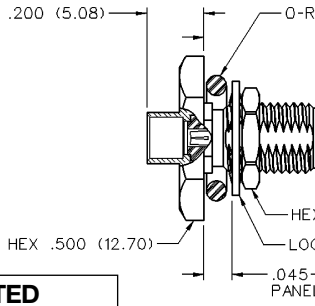


CABLE TYPE	VSWR & FREQ. RANGE	GOLD PLATED	NICKEL PLATED
.086 Semi-Rigid	0-18 GHz: 1.07 + .01f (GHz) 18-28 GHz: <1.30 Typical	142-0693-061	142-0693-066
.141 Semi-Rigid	0-18 GHz: 1.05 + .01f (GHz) 18-28 GHz: <1.25 Typical	142-0694-061	142-0694-066

Assembly instruc back page.

Straight Solder Type Bulkhead Jack With Captivated Solderless Contact and O-Ring

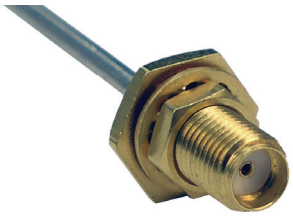


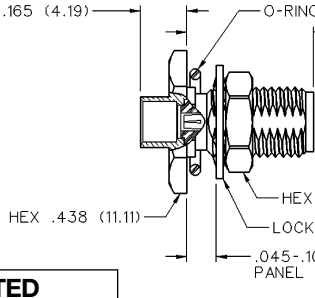


CABLE TYPE	VSWR & FREQ. RANGE	GOLD PLATED	NICKEL PLATED
.086 Semi-Rigid	0-18 GHz: 1.07 + .01f (GHz) 18-25 GHz: <1.30 Typical	142-0593-421	142-0593-426
.141 Semi-Rigid	0-18 GHz: 1.05 + .01f (GHz) 18-25 GHz: <1.25 Typical	142-0594-421	142-0594-426

Assembly instruc mounting hole lay on back page.

Straight Solder Type Bulkhead Jack With Captivated Solderless Contact and O-Ring



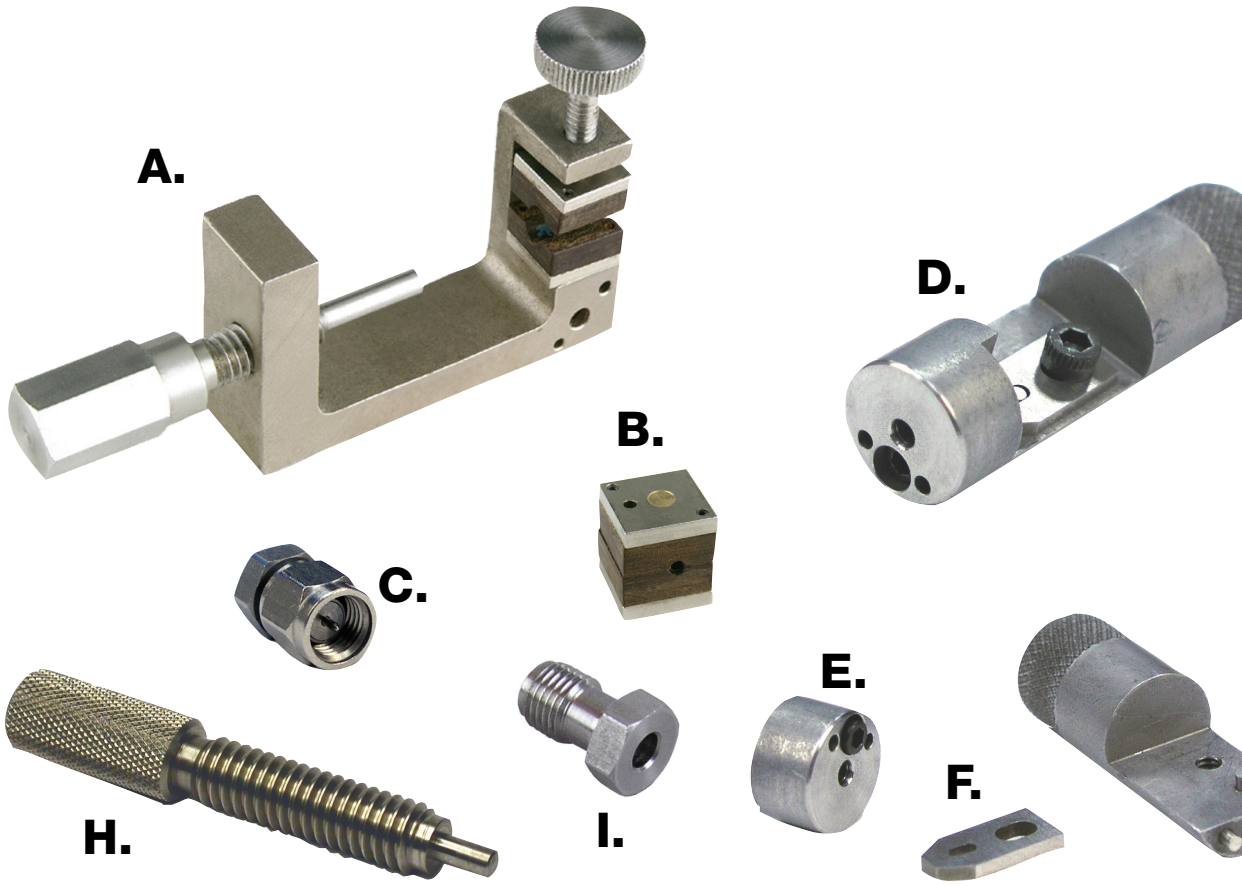


CABLE TYPE	VSWR & FREQ. RANGE	GOLD PLATED	NICKEL PLATED
.086 Semi-Rigid	0-18 GHz: 1.07 + .01f (GHz) 18-25 GHz: <1.30 Typical	142-0593-431	142-0593-436
.141 Semi-Rigid	0-18 GHz: 1.05 + .01f (GHz) 18-25 GHz: <1.25 Typical	142-0594-431	142-0594-436

Assembly instruc mounting hole lay on back page.

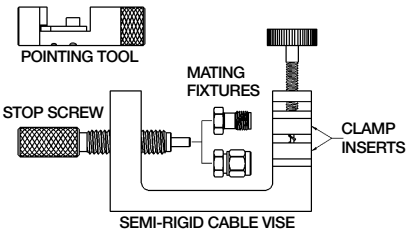
Semi-Rigid Assembly Tools

Accurate assembly of the Semi-Rigid Cabled Connectors is obtained with the tools listed below. Industry sta
are used if possible for customer convenience and tool compatibility.

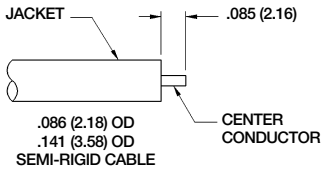


ITEM	PART NUMBER	DESCRIPTION
A	140-0000-962	Soldering Vise (does not include inserts (B) or stop screw (H))
B	140-0000-964	Semi-Rigid Cable Clamp Inserts for .086" OD Cable
	140-0000-965	Semi-Rigid Cable Clamp Inserts for .141" OD Cable
C	140-0000-973	Soldering Mating Fixture for SMA Jack Connectors
D	140-0000-975	Complete Center Conductor Pointing Tool for .086" OD Cable
	140-0000-976	Complete Center Conductor Pointing Tool for .141" OD Cable
E	140-0000-977	Bushing for .086" OD Cable Conductor Pointing Tool
	140-0000-978	Bushing for .141" OD Cable Conductor Pointing Tool
F	140-0000-979	Blade for Center Conductor Pointing Tool
G	140-0000-980	Frame for Center Conductor Pointing Tool
H	140-0000-981	Stop Screw for Semi-Rigid Cable Soldering Vise
I	140-0000-982	Soldering Mating Fixture for SMA Plug Connectors

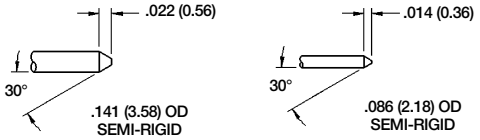
ASSEMBLY INSTRUCTIONS



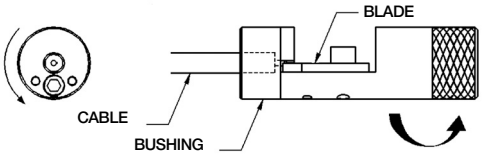
Identify the connector (plug or jack) and tools



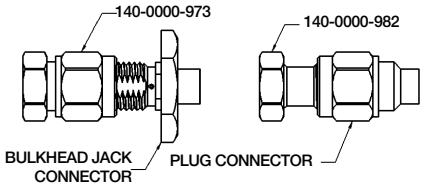
Strip the cable jacket and dielectric to dimension shown. Do not nick the cen
ductor.



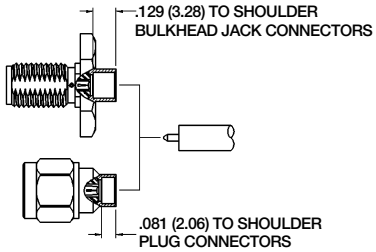
Bevel the entire diameter on the end of the cable center conductor until the p
resembles the appropriate dimensional profile. This operation can be accom
effectively by using the recommended center conductor pointing tool as des
in step 4.



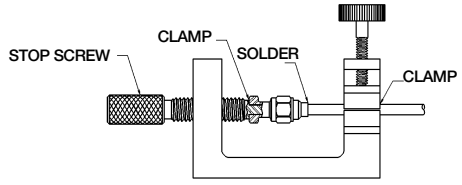
Insert the stripped cable into the bushing of the appropriate pointing tool unt
center conductor just touches the blade. While maintaining light pressure on
center conductor against the blade, turn the tool in a counter-clockwise fash
viewed from the bushing end of the tool. Continue cutting the center conduc
point until the cable jacket bottoms out inside the bushing.



Attach the appropriate soldering mating fixture to the connector and tighten
maximum of 8 inch pounds of torque.



Clean all debris from the prepared cable and insert the cable into the connec
making sure that the cable jacket bottoms out against the internal shoulder c
connector body.



Insert the stop screw into the mating fixture. Clamp the cable and fixtured co
assembly securely in the soldering vise. Solder the connector body to the ca
shown, while insuring the cable dielectric expansion does not move the asse
Allow the assembly to cool before removing the connector from the fixture

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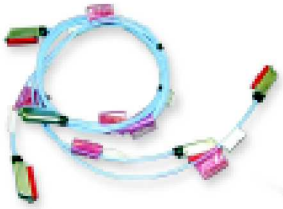

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High Performance components including Attenuators, Terminations, Couplers, DC Blocks, Power Dividers, Phase Shifters, Adapters and High Performance Low Loss RF cable Assemblies. Able to offer QPL qualified products. Standard components held in stock.

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Residential and multi-unit amplifiers, security terminators, and drop splitters and passives. Headend signal management products and fiber optic connectivity for headend and optical node applications and return path test equipment

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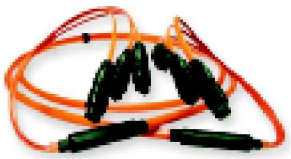
Subminiature, microminiature, miniature and standard connectors, and custom assemblies, including SMA, SMB, 40 GHz-capable SMK, MCX, MMCX, BNC and N Connectors. Custom designs and modifications of standard products.



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High performance multimode and single mode fiber patch cords, multi-fiber assemblies and attenuators. Solutions for the Storage Area Network and Enterprise computing markets and for ESCON™, optical FibreChannel, Infiniband and Parallel Optics applications.

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