

Interseries Mating of Precision Connectors

0.036 inch Diameter Center Contact

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The five connectors listed here will mate since they all have a 0.036 in. diameter mating contact and a common coupling nut size. Mechanical properties of these five connectors are shown below:

Mechanical Properties of 0.036 Diameter Center Conductor Connectors

Connector	Center Diameter inches (mm)	Center Length inches (mm)	Dielectric	Inner Diameter of Connector Body inches (mm)
SMA	0.036 (0.91)	0.100 (25.4)	PTFE (Teflon)	0.161 (4.1)
3.5mm	0.036 (0.91)	0.065 (1.65)	Air	0.138 (3.5)
2.9mm (K)	0.036 (0.91)	0.065 (1.65)	Air	0.115 (2.9)
K-Compatible (used on K-Jumper)	0.036 (0.91)	0.065 (1.65)	PTFE (Teflon)	0.138 (3.5)
SMA Point & Face (used on BJ141 cable)	0.036 (0.91)	0.065 (1.65)	PTFE (Teflon)	0.138 (3.5)

The difference between the 5 connectors is the length of the mating contact, the dielectric material, and the inside diameter of the connector. The standard SMA plug has a mating contact up to 0.100 inches long, which can engage the female contact before the connector bodies align the contacts and damage the female contact. The K-Compatible and the SMA Point and Face both use a mating contact length of 0.065 inches that prevents damage to the female contact.

Electrical Properties of 0.036 Diameter Center Conductor Connectors

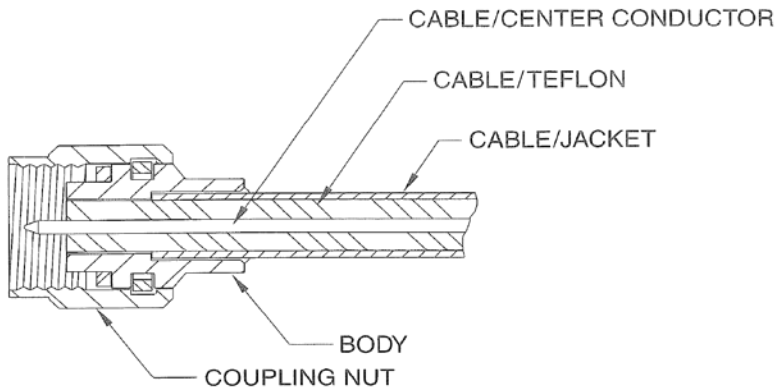
Connector Mating	Typical Match in dB (Return loss)	Electrical Mating Comments
SMA TO SMA	20 to 25 dB @ 18 GHz	Fair
SMA to 3.5mm	22 to 27 dB @ 18 GHz	Good
SMA to 2.9mm	24 to 29 dB @ 18 GHz	Excellent
SMA to K-Jumper	22 to 27 dB @ 18 GHz	Good
SMA to SMS-BJ141	22 to 25 dB @ 18 GHz	Fair
3.5mm to 3.5mm	20 to 25 dB @ 35 GHz	Fair
3.5mm to 2.9mm	20 to 24 dB @ 35 GHz	Fair
3.5mm to K-Jumper	20 to 24 dB @ 35 GHz	Fair
3.5mm to SMS-BJ141	19 to 23 dB @ 18 GHz	Fair
2.9mm to 2.9mm	21 to 24 dB @ 40 GHz	Good
2.9mm to K-Jumper	20 to 24 dB @ 35 GHz	Fair
2.9mm to SMS-BJ141	19 to 23 dB @ 18 GHz	Fair

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Point and Face Design



Both the K-Jumper and SMS-BJ141 use the center conductor of the cable as the male contact. The cable center conductor has a 0.036 inch diameter; the conductor is cut and pointed to a length of .065 inches to form the connector contact. The cable jacket stops midway thru the connector body and is soldered in place. The cable used in the K-Jumper and the BJ141 assemblies have a stable dielectric, which resists dielectric growth under temperature extremes. The K-Compatible connectors used in K-Jumper assemblies are designed to mate with 2.9mm and 3.5mm connectors. The frequency limit of the K-Jumper is the cutoff frequency of the cable around 36 GHz.