SMA PRECISION CONNECTOR GAGE KIT

A027 Series

A027A SMA Precision Connector Gage Kit

Features

- ***SMA Connectors***
- ***Direct Reading***
- ***Self-Checking***
- ***Accurate***
- ***Easy To Use***

Description

Maury A027 connector gage kits are designed to check the critical axial interface dimensions of type SMA female and male connectors per MIL-C-39012, both class 2 and standard test connectors.

The critical axial interface dimensions for SMA female and male connectors are shown in Figure 1 (see page 2). The ***Available Models*** table shows the various gage kits that are available to check these dimensions. These gage kits provide an accurate means for checking the critical interface of SMA type connectors. The gage assemblies are basically dial indicator comparators that will, when zero set, reflect the actual deviation from zero, which corresponds to deviation from the outer conductor mating plane.

The gage kits consist of one or more gage assemblies and a master gage supplied in a wooden instrument case. All gage parts and the master gage are made from stainless steel and will provide long service life with excellent dimensional stability.

Application

The critical axial interface of SMA type connectors are shown in Figure 1. These dimensions must be maintained in order to provide proper electrical performance and mechanical mating of male and female connectors. SMA connectors are designed to achieve a co-planar mating at the outer conductor mating plane, i.e., a metal-to-metal contact at the outer conductor mating plane. Destructive interference may result if the contacts protrude beyond the outer conductor mating planes. This may cause buckling of the female contact fingers or damage to associated equipment during mating. Conversely, an excessive gap of the center contacts when mated produces high reflections and causes breakdown under peak power conditions. The dielectric interface is also critical since protrusion beyond the outer conductor mating plane may prevent proper electrical contact, while an excessive recessed condition can introduce unwanted reflections in a mated pair. To prevent destructive mating and to insure electrical performance, all SMA connectors should be gaged after assembly to insure compliance to applicable specifications. Additionally, for best practice, SMA connectors on all equipment should be gaged periodically to detect any out-of-tolerance conditions that could impair electrical performance or cause damage to mating connectors.

Maury SMA gage kits are the best tools for ensuring optimum interface performance in production check-out, incoming inspection, quality control and daily laboratory operations.

Available Models

Model Number	Number of Gage Assemblies	Interface Measured (See Figure 1)
A027	2	Female and male contact pin; FP and MP dimensions.
A027A	4	Female and male contact pin; FP, FD, MP and MD dimensions.
A027G	2	Female contact pin and dielectric; FP and FD.
A027M	3	Male contact pin and dielectric; MP and MD, also measure 0.085 pin dimension of step-less pin male connector.

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Dimensions (Inches)

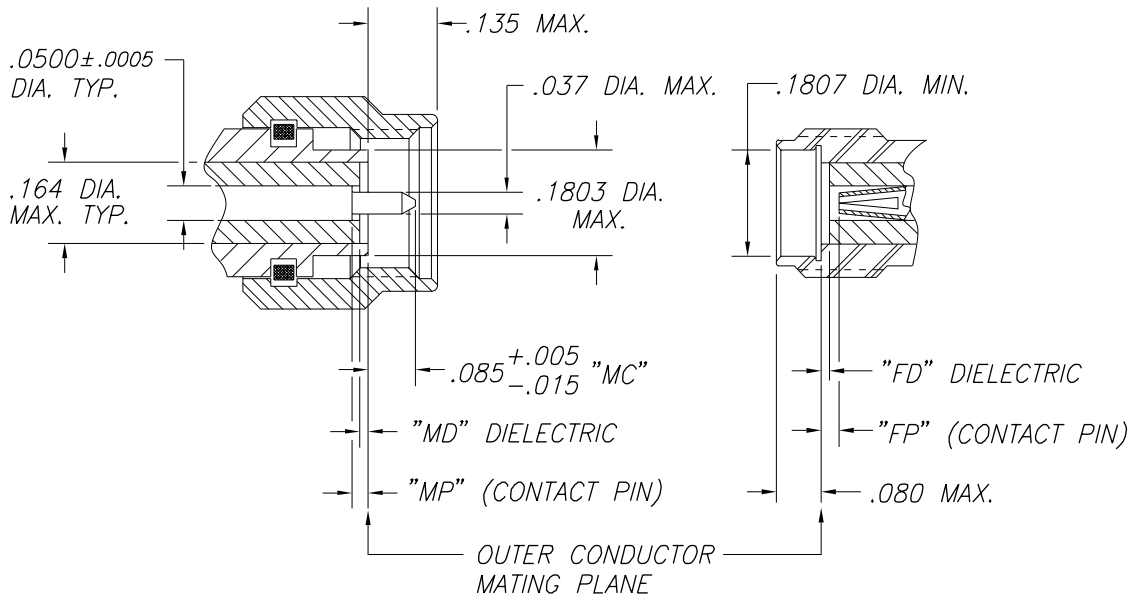

Figure 1 *Critical Axial Interface Dimensions of SMA Type Connectors*

Connector Gage Specifications

Table 1. Critical Axial Interface Tolerances per MIL Specification, Maury Standard/Precision Specification, or Industry Standard Specification.

Item	Specification	FP	FD	MP	MD	Comment
A	MIL-C-39012 Class 2	0.000 +0.030 -0.000	-0.002 Maximum	0.000 Minimum	-0.002 Maximum	Per MIL-C-39012/55 and MIL-C-39012/57
B	MIL-C-39012 Recommended	0.000 +0.010 -0.000	0.000 ± 0.002	0.000 +0.010 -0.000	0.000 ± 0.002	Recommended tolerance for MIL-C-39012 Class 2
C	MIL-C-39012 Standard Test	0.000 +0.003 -0.000	0.000 +0.002 -0.000	0.000 +0.003 -0.000	0.000 +0.002 -0.000	Per MIL-C-39012B Amendment 1
D	Maury Standard	0.000 +0.005 -0.000	0.000 ± 0.002	0.000 +0.005 -0.000	0.000 ± 0.002	Used on most Maury components
E	Maury Precision	0.000 +0.005 -0.000	0.000 +0.002 -0.000	0.000 +0.005 -0.000	0.000 +0.002 -0.000	Supplied on Maury precision components
F	Industry Standard	0.000 +0.010 -0.000	0.000 +0.005 -0.002	0.000 +0.010 -0.000	0.000 +0.005 -0.002	OSM 1979 catalog page 12

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SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Connector Gage Specifications (continued)

Table 2a. All Gages Except MC (Stepless Male Contact)

Characteristics	Limits	Comments
Gage Resolution	± 0.000100	1/5 Least dial graduation[1]
Gage Calibration Accuracy[5]	± 0.000750	1 Least dial graduation[2] plus 0.000250 measurement guardband
Gage Repeatability	± 0.000100	1/5 Least dial graduation[2]
Master Accuracy	± 0.000050	0.0001 Range[3]
Total Uncertainty[4, 5]		
RSS Worst Case	± 0.000765 ± 0.001000	Root sum of the squares. Add resolution, repeatability, gage and master accuracy limits.

Table 2b. MC Gage Only (Stepless Male Contact)

Characteristics	Limits	Comments
Gage Resolution	± 0.000100	1/5 Least dial graduation[1]
Gage Calibration Accuracy[5]	± 0.000750	1 Least dial graduation[2] plus 0.000250 measurement guardband
Gage Repeatability	± 0.000100	1/5 Least dial graduation[2]
Master Accuracy	± 0.001000	0.002 Range[3]
Total Uncertainty[4, 5]		
RSS Worst Case	± 0.001258 ± 0.001950	Root sum of the squares. Add resolution, repeatability, gage and master accuracy limits.

Notes

[1] Per ASME B89.1.10M-2001, C5.1.2.

[2] Per ASME B89.1.10M-2001, Table 2.

[3] Per manufacturers specifications.

[4] Performance standards are in compliance with ANSI/NCSL Z540-1, MIL-STD-45662A and ISO 10012-1.

[5] Applies over the operating range for connector gaging +0.035/–0.005" from master gage zero setting.

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