

INCH-POUND

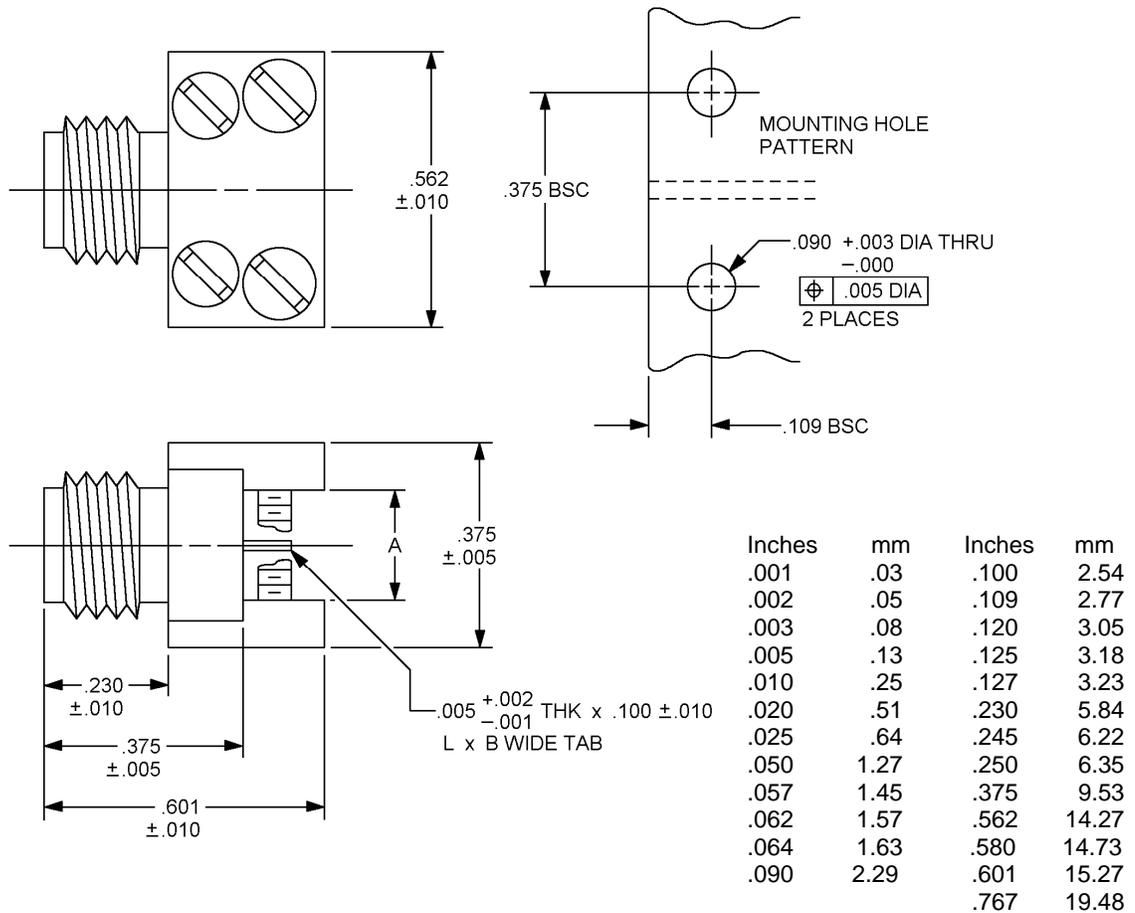
MIL-DTL-83517/9A  
w/AMENDMENT 1  
21 April 2015  
SUPERSEDING  
MIL-DTL-83517/9A  
31 May 2005

DETAIL SPECIFICATION SHEET

CONNECTOR, RECEPTACLES, ELECTRICAL, COAXIAL, RADIO FREQUENCY,  
STRIP OR MICROSTRIP TRANSMISSION LINE,  
SERIES SMA (SOCKET CONTACT, END LAUNCH)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of  
this specification sheet and MIL-DTL-83517.



Part or Identifying Number (PIN)	"A" dim.	"B" dim.	Transmission line thickness
M83517/9-31001	.064/.057	.025 ±.002	.062
M83517/9-31002	.127/.120	.050 ±.001	.125
M83517/9-31003	.250/.245	.050 ±.001	.125 with (2) .063 support plates

FIGURE 1. Series SMA, socket contact, end launch, receptacle.

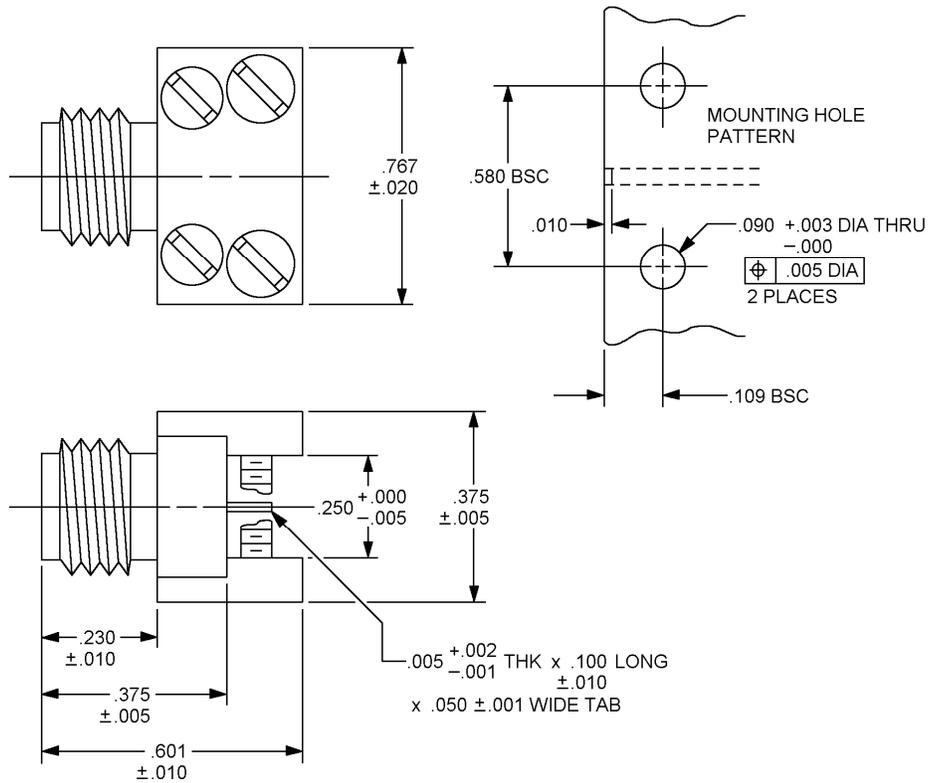


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NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. All undimensioned pictorial configurations are for reference purposes only.
4. Mounting screws shall be steel in accordance with MIL-DTL-83517. Number 2 screws are suggested for mounting.

FIGURE 1. Series SMA, socket contact, end launch, receptacle – Continued.



Inches	mm	Inches	mm
.001	.03	.100	2.54
.002	.05	.109	2.77
.003	.08	.230	5.84
.005	.13	.250	9.53
.010	.25	.580	14.73
.020	.51	.601	15.27
.050	1.27	.767	19.48
.090	2.29		

PIN	Transmission line thickness
M83517/9-31004	.250

FIGURE 2. Series SMA, socket contact, end launch, receptacle (.250 inch).

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4. Mounting screws shall be steel in accordance with MIL-DTL-83517. Number 2 screws are suggested for mounting.

FIGURE 2. Series SMA, socket contact, end launch, receptacle (.250 inch) – Continued.

ENGINEERING PARAMETERS

Nominal impedance: 50 ohms.

Voltage rating: 600 V rms maximum at sea level, 335 V rms for M83517/9-31001 only.  
150 V rms maximum at 70,000 feet.

Frequency range: 0 to 18.0 GHz.

Temperature rating: -65° to 105°C.

REQUIREMENTS

Design and construction: See figures 1 and 2, table I and MIL-STD-348.

Force to engage and disengage:

Torque – 2 inch-pounds maximum.  
Longitudinal force – Not applicable.

Coupling proof torque: Not applicable.

Inspection note: For each test of threaded coupling connector where the test is performed on mated pairs, the pairs shall be torqued to 7 to 10 inch-pounds.

Contact gaging: See figure 3.

Contacts with spring members:

Center contact (socket):

Oversize test pin - .0375 +.0001.  
Test pin finish – 16 microinches.  
Insertion depth - .030/.045.  
Number of insertions – 3.

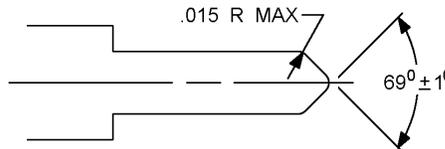
Insertion force test: Steel test pin diameter .0370 + .0001.

Insertion depth - .050/.075.  
Test pin finish – 16 microinches.  
Insertion force – 3 pounds maximum.

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Withdrawal force test: Steel test pin diameter .0355 - .0001.

Insertion depth - .050/.075.  
Withdrawal force – 1 ounce minimum.  
Test pin finish – 16 microinches.



Inches mm  
.015 0.38

FIGURE 3. Test pin data.

TABLE I. PIN and characteristics.

PIN M83517/9-	Connector figure no.	Characteristics
31001	1	Strip transmission line end launch, receptacle .025 inch (0.64 mm) wide tab, for .062 inch (1.57 mm) strip transmission line.
31002	1	Strip transmission line end launch, .050 inch (1.27 mm) receptacle .050 inch (1.27 mm) wide tab, for .125 inch (3.18 mm) strip transmission line.
31003	1	Strip transmission line end launch, receptacle, .050 inch (1.27 mm) wide tab, (2) .063 inch (1.60 mm) support plates, for .125 strip transmission line.
31004	2	Strip transmission line end launch, receptacle, .050 inch (1.27 mm) wide tab, for .250 inch (6.35 mm) strip transmission line.

Permeability of nonmagnetic materials: Applicable.

Seal:

Hermetic sealed connectors: Not applicable.

Pressurized and weatherproof connectors: Not applicable.

Insulation resistance: 5,000 megohms minimum in accordance with test procedure EIA/ECA-364-21.

Center contact retention (excluding transition end):

Axial force: 6 pounds minimum.

Torque: 4 inch-ounces minimum.

Dielectric withstanding voltage: In accordance with test procedure EIA-364-20, test condition I.

Test voltage 1,000 V rms.

Corrosion: In accordance with test procedure EIA/ECA-364-26, test condition B.

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Voltage standing wave ratio (VSWR):  $1.10 + .02F$  (F in GHz), maximum.

Test frequency range: From .5 to 18.0 GHz. (Using a test method approved by the qualifying activity.)

RF transmission loss:  $.07\sqrt{F}$  (F in GHz) tested from 2-18 GHz.

RF leakage: Not applicable.

Connector durability:

Interface:

500 cycles minimum at 12 cycles/minute maximum rate.

Connector shall meet contact gaging and force to engage and disengage requirements.

Contact resistance: In milliohms maximum.

	<u>Initial</u>	<u>After environment</u>
Center contact:	3.0	4.0
Outer contact:	2.0	Not applicable

Thermal shock: Applicable, test condition A.

Moisture resistance: Method 106 of MIL-STD-202.

No measurements at high humidity. Insulation resistance shall be at least 200 megohms within 5 minutes after removal from humidity.

RF high potential withstanding voltage:

At a frequency between 5 to 7.5 MHz.

Leakage current – Not applicable.

RF voltage – 670 V rms.

Coupling mechanism retention force: Not applicable.

PIN: M83517/9-(dash number from table I.)

Group qualification: See table II.

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TABLE II. Group qualification.

Group	Submission and qualification of any of the following connectors 1/ 2/ M83517/9-	Qualifies the following connectors M83517/9-
1	3+001	3+001 3+002 3+003 3+004

- 1/ Individual connectors other than listed are self qualifying only.  
2/ Qualification of connectors, qualifies connectors of the same material only.  
+ Denotes finish.

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Referenced documents. In addition to MIL-DTL-83517, this document references the following:

- MIL-STD-202
- MIL-STD-348
- EIA-364-20
- EIA/ECA-364-21
- EIA/ECA-364-26

CONCLUDING MATERIAL

Custodians:  
Army – CR  
Navy – EC  
Air Force – 85  
DLA - CC

Preparing activity:  
DLA – CC  
  
(Project 5935-2015-139)

Review activities:  
Army – AR, AT, CR4, MI  
Navy – AS, MC, OS, SH  
Air Force – 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil/>.